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ANALYTICAL AND TECHNICAL MEMORANDUM
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MIGRATION PROJECTIONS FOR CANADA
1969-84

by

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Population Estimates and Projections Section

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MIGRATION PROJECTIONS FOR CANADA
1969-84*

Résumé

Cette étude examine les tendances passées et futures d'immigration et d'émigration par âge et sexe jusqu'en 1984 pour le besoin de la projection de population du Canada élaborée par le Bureau fédéral de la statistique. Plusieurs problèmes tant méthodologiques que statistiques devront être résolus au préalable. Cette étude explore, quelquefois empiriquement, les façons d'estimer la distribution par âge et sexe des immigrants et émigrants et d'autres données requises pour les projections. On s'attend à ce qu'entre 80,000 et 200,000 immigrants arriveront dans ce pays annuellement pendant les quinze années à venir; d'autre part on estime le nombre d'émigrants à 60,000 par année durant cette même période. Les projections basées sur ces hypothèses indiquent une addition cumulative nette de 108,000 à 749,000 à la population totale d'ici 5 ans. Ceci implique un accroissement, dû aux migrations, d'un 1/10 à 3/4 de 1 pour-cent de la population totale de chaque année.

Abstract

This study examines past trends, and it presents projections of immigration and emigration by age and sex up to 1984 for incorporation in the DBS population projections for Canada. Several problems, both methodological and statistical, will have to be solved before completing the work, and the present study explores, sometimes empirically, ways of estimating the age-sex distribution of immigrants/emigrants and other data needed for the projections. As for the prospects, it is anticipated that immigration will range from 80,000 to 200,000 persons a year over the next fifteen years while emigration will be about 60,000 persons in a year. Projections based on these assumptions indicate a cumulative net additions to population of 108,000 to 749,000 in five years. This will mean an increase through migration of about one-tenth to three-fourths of 1 per cent of the total population in each year.

* This is a revised version of an earlier background paper prepared for the DBS 1969 Population Projections for Canada. Acknowledgement is made to Drs. L.O. Stone, A. Romaniuk, M.V. George and Miss M.E. Fleming for their valuable comments and to Messrs. H.G. Beyer, M.B. Ismaili and several summer students for various help in the completion of this project. The author is, however, responsible for any errors in this paper.

1. Introduction

Migration projections(1), although very hazardous to undertake, are of crucial importance in population projections for Canada. This importance stems from two sources: (a) the direct contribution of migration each year to the growth and structure of population, and (b) the indirect influence of births and deaths over years among immigrants after their arrival. Efforts to prepare migration projections shall therefore lie in discerning the future role of these two main sources.

Three methods can broadly be conceived to project either of these sources or both. The first is a consensus method based on the opinion of experts and/or administrators at the concerned department of the government. The second may be called the analytical method that rests on examining historical data and, most likely, extrapolation of statistical trends. Both these techniques are to a varying degree arbitrary and subject to errors. Therefore, the third possible procedure is to base projections on sophisticated models that attempt to relate migration in a systematic way to a set of measurable explanatory variables for which reasonable projections already exist or can be prepared readily. Models of this sort are still in their infancy, and it is difficult to predict at this stage their efficiency and ultimate usefulness.

In addition to the above methodological problems, the application of any of these methods is severely limited by the nature and availability of data. Migration statistics are generally very poor or non-existent and suffer from various errors. This description is true even of Canada as far as the information on emigration and on the indirect effects of migration is concerned. However, immigration statistics are in great detail available for Canada, especially for the post-war years to examine its direct impact on population change. In these circumstances, the present paper adopts both analytical and consensus methods to prepare migration projections for Canada over the next fifteen years.

Even so the indirect contribution of migration to population growth is hard to project for this period. Current knowledge about the fertility behaviour of the immigrant women is limited, and a lot of research is needed in this field. Pending this development, it is simply assumed for the present purpose that the future fertility and mortality among international migrants would be the same as that projected for the resident population. These demographic projections are available in related papers prepared for DBS 1969 Population Projections for Canada (Romaniuk, 1969; Zayachkowski, 1969).

2. Post-war Trends in Migration

Migration has been an important source of population change in Canada over the past decades. In the post-war period alone, migration contributed positively from five to forty per cent (excluding 1948-49) of the total population increase

(1) The term "migration projections", unless specifically stated, refers in this paper to immigration projections and/or emigration projections.

in a year (Table 1). Historically speaking, this is a significant development in the sense that the country has consistently gained over the past two and a half decades with the exception perhaps of a year or two. In contrast to these recent trends, demographers analysing the data for earlier decades from 1851 to 1941 observed gains as well as losses in some decades (cf. Keyfitz, 1950, p. 50; McDougall, 1961, p. 172). The factors responsible for recent trends in migration might be innumerable and lay in different fields, demographic, economic, political and so on. Migration research, both historical and cross-sectional, has not so far dwelled adequately into the causative forces of migration to and from Canada. Consequently, an explanation of past trends and hence projections of future trends have perforce to take the form of broad generalisation based on descriptive analyses. Such a procedure is followed below to explain the post-war trends.

TABLE 1. Growth of the Population of Canada through
Natural Increase and Net Migration, 1949-69
(numbers in thousands)

Year/Period (June 1 to May 31)	Total population (at end of period)	Growth		Contribution of natural increase to total growth		Contribution of net migration to total growth	
		Number	Per- centage	Number	Per- centage	Number	Per- centage
1949-59 1959-69	(a) Decennial						
	17,483	4,036	30	2,945	73	1,092	27
	21,061	3,578	20	2,854	80	723	20
1949-50 1950-51..... 1951-52 1952-53 1953-54 1954-55 1955-56 1956-57 1957-58 1958-59 1959-60 1960-61 1961-62 1962-63 1963-64 1964-65 1965-66 1966-67 1967-68 1968-69	(b) Annual						
	13,712	265	1.9	233	88	32	12
	14,009	297	2.1	242	82	55	18
	14,459	450	3.1	265	59	185	41
	14,845	386	2.6	279	72	107	28
	15,287	442	2.9	302	68	140	32
	15,698	411	2.6	315	77	96	23
	16,081	383	2.4	312	81	71	19
	16,610	529	3.2	329	62	201	38
	17,080	470	2.8	334	71	136	29
	17,483	403	2.3	334	83	69	17
	17,870	387	2.2	339	88	48	12
	18,238	368	2.0	339	92	30	8
	18,583	345	1.8	329	95	16	5
	18,931	348	1.8	326	94	22	6
	19,291	360	1.9	315	88	45	12
	19,644	353	1.8	294	83	59	17
	20,015	371	1.8	254	68	117	32
	20,405	384	1.9	232	61	151	39
	20,744	345	1.7	215	62	130	38
21,061	317	1.5	211	67	106	33	

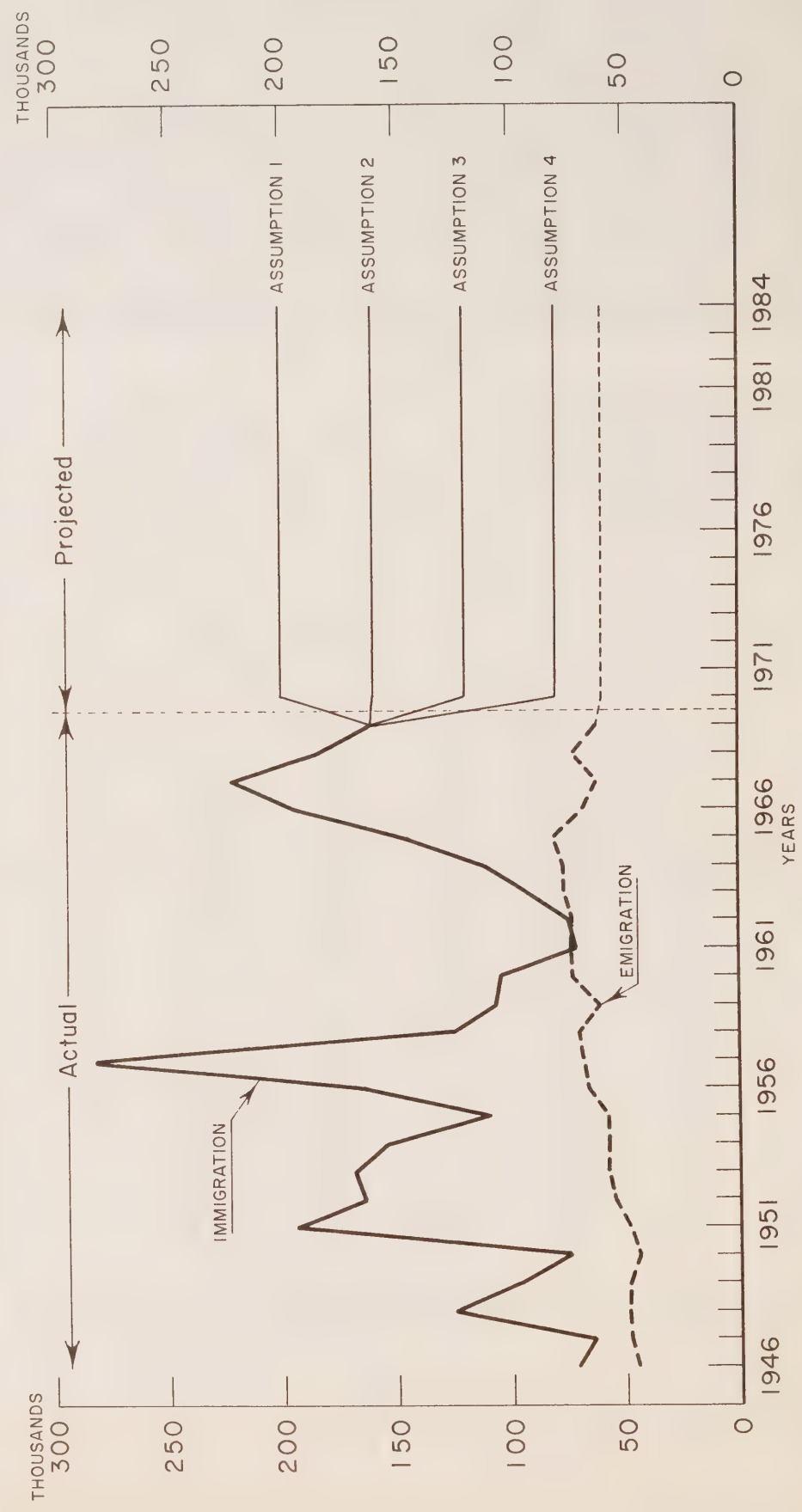
Sources: 1. Based on the unpublished worksheets relating to the annual population estimates prepared at the Population Estimates and Projections Section, Census Division, DBS.
2. See also DBS, Population 1921-66, Catalogue No. 91-511, pp. 36-53.

Note: The decennial contribution of net migration to the total growth was obtained by adding the annual net migration figures for the ten years from 1949 to 1959 and 1959 to 1969.

As the figures in Table 1 indicate only the balance of immigration to and emigration from Canada for each year ending May 31, it may be worthwhile to go behind these figures for an explanation of past migratory trends, and to examine the trends per se in the two streams. As pointed out before, emigration series are estimates and consequently, to some extent, analyses of emigration trends may be less accurate. Chart 1 depicts the volume of immigration to and emigration from Canada from 1946 to 1968. Over this period, emigration fluctuated within a small range while immigration was spread over a wide range. The large contribution of migration in some years to population growth shown in Table 1 coincided with an increasing volume of immigration rather than any sharp decline of emigration from Canada in the same years. Likewise, the smaller gains were found to be due to low immigration rather than to an increased outflow of people. In short, immigration was the dominant factor governing the volume of net migration as given in Table 1 for the past two decades.

CHART I

IMMIGRATION TO AND EMIGRATION FROM CANADA, 1946-84



Sources: Immigrants - Canada, Department of Manpower and Immigration. Immigration Statistics, 1959 to 1968. Immigration Division, DMI, Ottawa.
Emigrants - Estimates prepared in the Population Estimates and Projections Section, Dominion Bureau of Statistics, Ottawa.

3. Future Immigration and Emigration

From the foregoing analyses of immigration which were characterized by such wide fluctuations, it is hard to foresee with some degree of confidence the future course of migration. Construction of migration models as an aid to prepare projections is considered not feasible with the present knowledge of this field. Therefore, future trends shall be inferred from past trends only.

In the previous population projections, the procedure was to assume an absolute volume of migration to and from Canada every year. For example, the Economic Council made three assumptions, namely, 200,000, 150,000 and 100,000 immigrants to Canada each year against an outflow of 80,000 emigrants throughout the projection period of fifteen years from 1965 to 1980. (Illing, et al., 1967, p. 23). These straight-line assumptions regarding migration can, at best, attempt to gauge the average volume of migration in future and in the light of past fluctuations a single average migration assumption cannot be adequate in preparing population projections for Canada. In the following paragraphs, therefore, the past immigration and emigration trends are reviewed from different angles with a view to arrive at a set of reasonable assumptions regarding the future volume of migration.

First, immigration since 1946 was ranked in order of magnitude and Table 2 presents the top ten years when immigration was at a high tide and the bottom ten years when it was at a low ebb. To concentrate for the moment on long-term projections, (2) the average for the ten best years of immigration was calculated to be about 190,000 immigrants a year. Similarly, the average for the ten years of very low immigration in Table 2 was 87,000 persons a year. For the purpose of short-term projections, the focus was changed from an examination of trends since post-war years to that in the more recent period (i.e. from 1961) and, following the definition of short-term to include three years, the average for the three years of high immigration (1967, 1968 and 1966) was found to be 201,000 a year. The average for three recent years of low immigration (1961, 1962 and 1963) amounted to 80,000 persons a year. For the period 1969-84, over the short as well as the long periods, the immigration may therefore be assumed to lie within the range of 80,000 and 201,000 or roughly 200,000 a year.

(2) In this paper, the long term refers to a period of ten years and the short term to a period of three years.

TABLE 2. Ten Highest and Lowest Years of Immigration During 1946-68

Year	Total population	Immigration	Emigration	Immigration as a percentage of total population	Emigration as a percentage of total population
<u>Ten highest years of immigration</u>					
1951	14,009,000	194,391	47,900	1.39	0.34
1952	14,459,000	164,498	55,400	1.14	0.38
1953	14,845,000	168,868	58,200	1.13	0.39
1954	15,287,000	154,227	57,700	1.01	0.38
1956	16,081,000	164,857	67,100	1.02	0.42
1957	16,610,000	282,164	68,900	1.70	0.41
1965	19,644,000	146,758	81,200	0.75	0.41
1966	20,015,000	194,743	68,800	0.97	0.34
1967	20,405,000	222,876	62,800	1.09	0.31
1968	20,744,000	183,974	73,000	0.89	0.35
Average (long term) based on ten years	17,209,900	187,736	64,100	1.09	0.37
Average (short term) based on three years, i.e. 1966, 1967 and 1968	20,386,000	200,564	67,660	0.98	0.33
<u>Ten lowest years of immigration</u>					
1946	12,292,000	71,719	45,000	0.58	0.37
1947	12,551,000	64,127	48,500	0.51	0.39
1949	13,447,000	95,217	48,500	0.71	0.36
1950	13,712,000	73,912	43,900	0.54	0.32
1955	15,698,000	109,946	57,700	0.70	0.37
1959	17,483,000	106,928	61,500	0.61	0.35
1960	17,870,000	104,111	73,300	0.58	0.41
1961	18,238,000	71,689	73,600	0.39	0.40
1962	18,583,000	74,586	73,900	0.40	0.40
1963	18,931,000	93,151	76,800	0.49	0.40
Average (long term) based on ten years	15,880,500	86,539	60,270	0.54	0.38
Average (short term) based on three years, i.e. 1961, 1962 and 1963	18,582,000	79,801	74,759	0.43	0.40

Sources: Canada, Department of Manpower and Immigration (Immigration Division), Immigration Statistics 1959 to 1968 (Annual); DBS 91-201 (Annual)
Estimates of Population of Canada by Provinces; estimates of emigration are from the worksheets of population estimates prepared at the Population Estimates and Projections Section, Census Division, DBS.

The average emigration over the long term varied from 64,000 a year when immigration was high, to 60,000 a year when immigration was low (see Table 2). The corresponding range for the short term was between 68,000 and 75,000 a year.

Secondly, a similar analysis of past trends was approached from the emigration angle and Table 3 shows the top ten years, after 1946, when emigration was very high as well as the ten years when it was low. The average high emigration for ten years, that is in the long term, was an estimated 74,000 persons a year and the average low emigration was 51,000. For the short period, the range was between 74,000 and 58,000 a year. Considering these past levels and taking into account the range of emigration indicated in Table 2, the future emigration may be supposed to lie between 51,000 and 75,000 or roughly between 50,000 and 75,000 persons a year. However, as this range is very small, a single assumption of 60,000 emigrants each year during the projection period of fifteen years is here suggested for adoption in the population projections for Canada.

TABLE 3. Ten Highest and Lowest Years of Emigration During 1946-68

Year	Total population	Immigration	Emigration	Immigration as a percentage of total population	Emigration as a percentage of total population
<u>Ten highest years of emigration</u>					
1957	16,610,000	282,164	68,900	1.70	0.41
1958	17,080,000	124,851	70,600	0.73	0.41
1960	17,870,000	104,111	73,300	0.58	0.41
1961	18,238,000	71,689	73,600	0.39	0.40
1962	18,583,000	74,586	73,900	0.40	0.40
1963	18,931,000	93,151	76,800	0.49	0.41
1964	19,290,000	112,606	77,100	0.58	0.40
1965	19,644,000	146,758	81,000	0.75	0.41
1966	20,015,000	194,743	68,800	0.97	0.34
1968	20,744,000	183,974	73,000	0.89	0.35
Average (long term) based on ten years	18,700,500	138,863	73,720	0.74	0.39
Average (short term) based on three years, i.e. 1965, 1966 and 1968	20,132,000	175,158	74,059	0.87	0.37
<u>Ten lowest years of emigration</u>					
1946	12,292,000	71,719	45,000	0.58	0.37
1947	12,551,000	64,127	48,500	0.51	0.39
1948	12,823,000	125,414	48,800	0.98	0.38
1949	13,447,000	95,217	48,500	0.71	0.36
1950	13,712,000	73,912	43,900	0.54	0.32
1951	14,009,000	194,391	47,900	1.39	0.34
1952	14,459,000	164,498	55,400	1.14	0.38
1953	14,845,000	168,868	58,200	1.14	0.39
1954	15,287,000	154,227	57,700	1.01	0.38
1955	15,698,000	109,946	57,700	0.70	0.37
Average (long term) based on ten years	13,912,300	122,232	51,160	0.88	0.37
Average (short term) based on three years, i.e. 1953, 1954 and 1955	15,275,000	144,333	57,861	0.94	0.38

Sources: Canada, Department of Manpower and Immigration (Immigration Division), Immigration Statistics 1959 to 1968 (Annual); DBS 91-201 (Annual) Estimates of Population of Canada by Provinces; estimates of emigration are from the worksheets of population estimates prepared at the Population Estimates and Projections Section, Census Division, DBS.

According to Table 3 the average immigration over the long term was 139,000 a year during the ten years of high emigration and 122,000 a year during the ten years of low emigration. The averages for the short run were respectively 175,000 and 144,000 a year. These levels fall within the range of immigration earlier postulated for the future, namely, 80,000 to 200,000 persons per annum. This range, however, is considerably wide and therefore, it is further proposed to include in the population projections four assumptions covering the above range of prospective immigration. These assumptions are 200,000; 160,000; 120,000 and 80,000 immigrants a year during the projection period. The resulting net gains from future migration under the proposed four immigration and one emigration assumptions are shown in Table 4.

TABLE 4. Assumed Average Annual Immigration and Emigration During 1969-84

(thousands of persons)

	Gross immigration	Gross emigration	Net immigration
Assumption 0	0	0	0
Assumption 1	200	60	140
Assumption 2	160	60	100
Assumption 3	120	60	60
Assumption 4	80	60	20

In reality, however, ten or even three good or bad years in succession are not too common. Nor does prosperity and recession alternate in known periodicity. Therefore, as already cautioned, it is not feasible to approximate the future migration in one series of projections. At the same time, however, the projection of a wide range of possibilities as proposed in Table 4, can prove unwieldy at the time of integration with a series of alternative fertility and mortality projections to arrive at population projections. The set becomes even more unwieldy when the population projections have to be used for socio-economic projections (school enrolment, labour force, households, etc.) that in turn involve a series of assumptions regarding future trends in these characteristics.

Hence, the net migration trends in recent years were further examined with a view to gauge the probable range of future net migration. For this purpose, the short and long term averages for net migration were calculated from Table 1 for three recent years (1965 to 1968) and for ten recent years (1958 to 1968). These averages varied from 133,000 (short term) to 69,000 (long term) a year. On the basis of this range for net migration in which were embedded the effects of prosperity or recession, as happened in reality over the immediate past, the opinion may be hazarded that the course of future migration may be close to Assumption 2 given in Table 4.

4. Age-Sex Composition of Immigrants

The migration assumptions set forth in Table 4 are in aggregate terms. Projections are often required in detail by age and sex, and the DBS approach involves preparation of projections by single years of age and sex (Romaniuk and Gnanasekaran, 1968). Sections 4, 5 and 6 of this paper are therefore devoted to project the age-sex patterns of future immigration and emigration postulated in the preceding section.

For the purpose of detailed projections, the age-sex composition of immigrants during a single year, say, 1969 can be taken as the future distribution. But, the composition of migrants is generally subject to variation annually and therefore the data relating to a single year may reflect more often the peculiar conditions of the selected year. Hence, it is rational to take the average age-sex pattern of immigrants over a period of three, five, seven, ten or more years. A similar approach is proposed here and the following analyses are undertaken with a view to select a reasonable average pattern.

TABLE 5. Average Age-Sex Composition of Immigrants Based on
Three, Five, Seven and Ten Years, 1956-65

(number per 100,000 persons)

Age group	Three-year average (1963-65)		Five-year average (1961-65)		Seven-year average (1959-65)		Ten-year average (1956-65)	
	Males	Females	Males	Females	Males	Females	Males	Females
0- 4	5,105	4,868	4,926	4,679	4,771	4,538	4,713	4,462
5- 9	4,235	3,941	4,119	3,839	4,066	3,805	4,193	3,903
10-14	3,051	2,918	3,039	2,902	3,058	2,891	2,971	2,769
15-19	3,956	4,284	3,900	4,408	3,954	4,368	4,012	4,002
20-24	8,215	9,648	8,090	10,258	8,376	10,455	9,329	9,852
25-29	8,990	7,904	8,593	8,075	8,493	8,007	9,152	7,859
30-34	5,771	4,887	5,534	4,978	5,476	5,021	5,977	5,152
35-39	3,804	3,225	3,671	3,316	3,635	3,318	3,850	3,279
40-44	2,347	2,050	2,225	2,067	2,138	1,986	2,224	1,949
45-49	1,173	1,216	1,207	1,346	1,337	1,482	1,452	1,474
50-54	933	1,265	965	1,355	1,028	1,424	967	1,298
55-59	728	1,208	715	1,265	733	1,289	641	1,093
60-64	538	1,066	554	1,144	538	1,132	424	928
65-69	520	807	537	855	502	827	386	653
70+	475	872	512	926	476	876	362	674
All ages	49,841	50,159	48,587	51,413	48,581	51,419	50,653	49,347

Source: Based on Table A.2.

The procedure for selection consists of two steps: (a) the calculation of a number of average age-sex patterns of immigrants based on past data (1956-65) for different lengths of period, and (b) evaluation of these average age-sex structures to select a suitable one. For the purpose of evaluation, these different patterns are compared with the reported age-sex composition of immigrants after 1965 or in the present instance, during the period 1966-68. To illustrate the average for the period 1963 to 1965 was calculated to give an hypothetical age-sex structure of immigrants during 1966 to 1968 that is based on a period of three years; similarly, in Table 5, the averages for 1961 to 1965, 1959 to 1965 and 1956 to 1965 were calculated to postulate the age-sex structures during 1966-68 that are based respectively on five-, seven- and ten-year periods.

The results of comparison are given in Table 6 which presents the total absolute deviations of the above four hypothetical age-sex patterns (for analytical purposes assumed for the years 1966, 1967 and 1968) from those reported for these three years. Briefly, the pattern based on ten years average showed a total deviation for males of 2.90 percentage points for 1966 that was the least; as compared to that of 4.75, 5.43 and 3.27 percentage points, respectively, of the patterns relating to seven-, five- and three-year averages. This relatively low deviation for the ten-year average was observed for each year, 1967 and 1968 in Table 6. It was also true for females for 1967. For 1966 and 1968, the three- and seven-year average patterns, respectively, showed the least absolute deviations from the reported age structure. Over all, it appears that the age-sex pattern taken as the average for the preceding ten years may come close to the prospective age-sex structure of immigrants in the ensuing years.

TABLE 6. Comparison of Average Age-Sex Pattern of Immigrants Based on Three, Five, Seven and Ten Years with that Reported for 1966, 1967 and 1968

(figures are the total absolute deviations in percentage points)

Year	Three-year average (1963-65)		Five-year average (1961-65)		Seven-year average (1959-65)		Ten-year average (1956-65)	
	Males	Females	Males	Females	Males	Females	Males	Females
1966	3.27	2.97	5.43	4.82	4.75	5.17	2.90	3.27
1967	5.39	4.75	6.15	4.63	6.32	4.65	3.60	4.06
1968	5.40	5.16	5.54	4.57	5.37	4.32	3.99	4.99
Number of groups ..	15	15	15	15	15	15	15	15

Sources: Based on Tables 5 and A.2.

Two questions arise here. First, the absolute deviations are noted to be small and even smaller, if, as common, one half of the total deviations is taken and, therefore, it is questionable whether they are significant enough to indicate a clear choice for the ten-year average. Assuming the differences are small and not significant, it does not follow that the ten-year average should not be chosen. It only behoves to go behind these figures of total deviations and examine further these hypothetical structures based on three, five, seven and ten years. This is attempted in Table 7 which is an expansion of the previous table and presents the average of positive and negative deviations for the four hypothetical age-sex patterns of immigrants.

For males, the average positive deviations shown in Table 7 were considerably less for the hypothetical structure based on ten-year average than the others for 1966 and 1967. However, the average negative deviations, though not the lowest in all years, were observed to be not widely different from the lowest value.

In the case of females, the average positive deviations were, excepting 1966, the lowest for the hypothetical structure based on the seven-year average. But the average negative deviations turned out to be the smallest for the ten-year average in all periods excepting 1968. Over all, again, it was judged here that the odds in favour of choosing a ten-year average were greater than those of three-, five- and seven-year averages.

TABLE 7. Positive and Negative Deviations of Average Age-Sex Pattern of Immigrants Based on Three, Five, Seven and Ten Years from that Reported for 1966, 1967 and 1968

(in percentage points)

	Three-year average (1963-65)		Five-year average (1961-65)		Seven-year average (1959-65)		Ten-year average (1956-65)	
	Males	Females	Males	Females	Males	Females	Males	Females
<u>1966</u>								
Average positive deviation	0.31 (8)	0.16 (4)	0.68 (8)	0.31 (3)	0.55 (7)	0.37 (4)	0.21 (10)	0.31 (4)
Average negative deviation	0.12 (7)	0.21 (11)	0.12 (7)	0.33 (12)	0.13 (8)	0.34 (11)	0.17 (5)	0.18 (11)
<u>1967</u>								
Average positive deviation	0.72 (5)	0.37 (4)	0.58 (8)	0.26 (3)	0.67 (7)	0.20 (4)	0.30 (8)	0.38 (4)
Average negative deviation	0.20 (9)	0.30 (11)	0.22 (7)	0.32 (12)	0.20 (8)	0.35 (11)	0.19 (7)	0.23 (11)
<u>1968</u>								
Average positive deviation	0.53 (6)	0.42 (5)	0.33 (5)	0.57 (2)	0.64 (6)	0.26 (4)	0.46 (5)	0.42 (6)
Average negative deviation	0.25 (9)	0.31 (10)	0.39 (10)	0.26 (13)	0.17 (9)	0.30 (11)	0.19 (10)	0.29 (9)

Note: Figures in brackets denote the number of age groups showing positive or negative deviations.

Sources: Based on Tables 5 and A.2.

The second question is whether a ten-year average will give undue weight to past distributions if there have been distinct trends by age and sex during, say, the past three, five or seven years. Two aspects are at least involved in this question, namely (a) the presence and proper measurement of trend, and (b) the projection of this trend over the future years.

As for the measurement of trend, there is no single procedure. In fact, what one may describe as a distinct trend may not appear so to another analyst. Nevertheless, a measure of average over a period is often relied upon in analysing and projecting a migration trend. In the previous projections, this average was calculated over a period of ten or fifteen years (Illing, et al., 1967, p. 8). The use of other averages, notably over three, five and seven years, were earlier examined along with a ten-year average and the choice of a ten-year average was indicated by the preceding analyses.

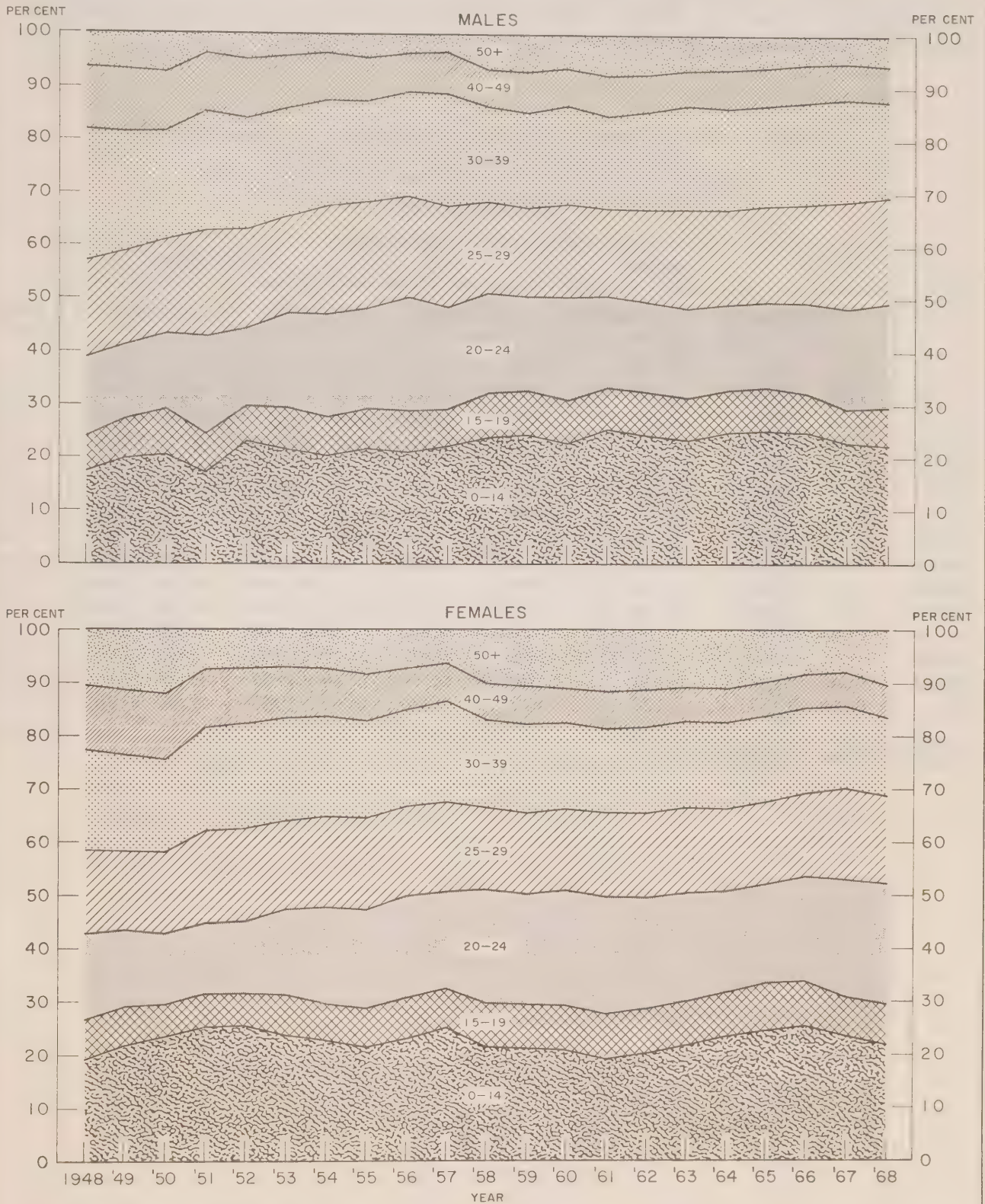
An indirect answer to the second question may be found from the foregoing analyses, and had there been a distinct trend during the period 1959-68, the hypothetical age-sex structures based on three, five and seven years might, in that order, have yielded less deviations than the ten-year average. But this was not the case and the ten-year average fared better as a measure of trend in terms of both total deviations and deviations by age groups and sex.(3) Based on a series of ten-year moving averages, a trend could be fitted either mathematically or graphically with a view to project the future age-sex structure of immigrants. This procedure was, however, not attempted here in anticipation of the findings in the following pages.

Toward gathering direct evidences of trend, Chart 2 was prepared to examine the past age composition of immigrants. In the post-war years for which data were plotted, the age pattern of immigrants by selected age groups showed variations within a small range. Confining the study to the more recent period 1956-68, it might be observed that the variations in the annual proportions of male immigrants by five-year age groups to the total males did not exceed five percentage points. The age groups for which the proportions showed greater variations were 20-24 (5.0 percentage points) and 25-29 (3.7 percentage points). The proportions for all other age groups fluctuated within a range of 2.5 percentage points as shown in Table 8.

(3) There is of course a subjective preference involved here in the choice of 3, 5, 7 and 10 years, and the study can be expanded to examine other averages based on 2, 4, 6, 8 years, etc.

CHART 2

VARIATIONS IN THE AGE COMPOSITION OF IMMIGRANTS TO CANADA BY SEX, 1948-68



Sources: Table A.3 and unpublished data.

A small variation in the age pattern was also generally true for female immigrants in this period. The age groups showing relatively wider variations included 20-24 (4.1 percentage points) and 0-4 (3.2 percentage points).

TABLE 8. Variations in the Age Composition of Immigrants by
Five-Year Age Groups and Sex, 1956-68

(in percentage)

Age group	Males			Females		
	Minimum	Maximum	Range	Minimum	Maximum	Range
0- 4	8.25 (1956)	10.60 (1966)	2.35	7.43 (1961)	10.58 (1966)	3.15
5- 9	7.85 (1960)	8.88 (1966)	1.03	6.36 (1961)	9.21 (1957)	2.85
10-14	4.85 (1956)	6.92 (1961)	2.07	5.16 (1962)	6.08 (1965)	0.92
15-19	6.41 (1967)	8.61 (1959)	2.20	7.07 (1957)	8.71 (1962)	1.64
20-24	16.11 (1964)	21.11 (1956)	5.00	18.66 (1957)	22.78 (1968)	4.12
25-29	16.28 (1961)	20.02 (1967)	3.74	15.22 (1960)	17.20 (1967)	1.98
30-34	10.49 (1961)	13.02 (1957)	2.53	9.02 (1968)	11.75 (1957)	2.73
35-39	6.91 (1968)	8.35 (1957)	1.44	5.61 (1968)	7.36 (1957)	1.75
40-44	3.91 (1960)	4.81 (1964)	0.90	3.35 (1960)	4.34 (1956)	0.99
45-49	2.19 (1963)	3.65 (1959)	1.46	2.35 (1963)	3.68 (1959)	1.33
50-54	1.41 (1968)	2.56 (1959)	1.15	1.91 (1967)	3.10 (1959)	1.19
55-59	0.84 (1957)	1.67 (1959)	0.83	1.55 (1957)	2.63 (1959)	1.08
60-64	0.43 (1957)	1.30 (1961-1962)	0.87	1.22 (1957)	2.45 (1961)	1.23
65-69	0.34 (1957)	1.31 (1961)	0.97	0.74 (1957)	1.80 (1962)	1.06
70+ ..	0.30 (1957)	1.32 (1961)	1.02	0.69 (1957)	1.97 (1962)	1.28

Source: Based on Table A.3.

In the light of these past variations in age pattern which were small, it was considered here safe to assume a constant age structure, namely, the ten-year average chosen before for all immigrants in the coming years. This pattern (i.e., average for 1959-68) is presented in Table 9.

TABLE 9. Assumed Age-Sex Composition of Immigrants
by Five-Year Age Groups through 1984

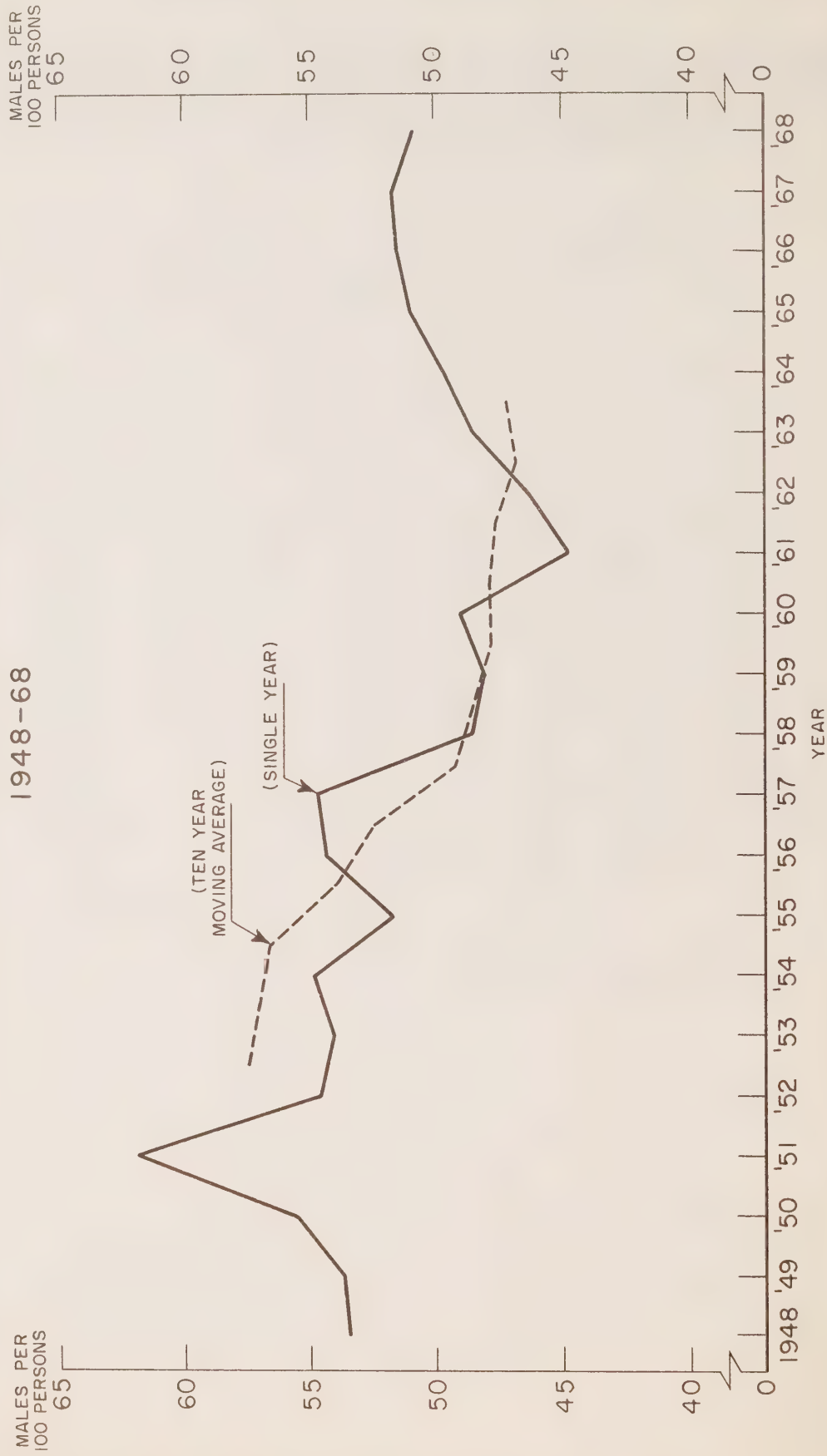
(number per 100,000 persons)

Age group	Males	Females
0- 4	4,879	4,607
5- 9	4,176	3,903
10-14	2,948	2,808
15-19	3,758	4,096
20-24	8,969	10,470
25-29	9,147	8,049
30-34	5,728	4,838
35-39	3,699	3,123
40-44	2,189	1,931
45-49	1,316	1,371
50-54	927	1,226
55-59	694	1,157
60-64	530	1,012
65-69	471	755
70+	427	796
All ages	49,858	50,142

Source: Based on Table A.2.

CHART 3

VARIATIONS IN THE SEX RATIO OF IMMIGRANTS,
1948-68



Sources: Appendix Table A.3 and unpublished data.

Besides the age pattern, the sex ratio of future immigrants must be projected. Chart 3 which presents the sex ratio among immigrants, showed wide fluctuations during 1948-68. In recent years, however, the fluctuations appeared to narrow, and the ten-year moving average drawn by a solid line in Chart 3 tended to approach gradually the mark of balance between the two sexes. It is most likely that this trend of about equal numbers of male and female immigrants may continue into the future. Hence, the sex ratio among future immigrants is assumed constant at the same level obtained by averaging the sex ratios for the same ten-year period 1959-68 that was adopted earlier to obtain the age pattern of future immigrants. This ratio is 49,858 males for 100,000 immigrants.

TABLE 10. Variations in the Sex Ratio (males per 100 persons) of Immigrants by Five-Year Age Groups During 1956-66

Age group	Actual ratios in the past			Projected ratios
	Minimum	Maximum	Range	
0- 4	50.15	(1963) 51.84	(1961) 1.69	51.43
5- 9	51.04	(1963) 52.65	(1956) 1.61	51.69
10-14	50.71	(1965-1966) 52.84	(1958) 2.13	51.22
15-19	43.48	(1961) 55.82	(1956) 12.34	47.85
20-24	38.87	(1961) 56.54	(1956) 17.67	46.14
25-29	45.87	(1961) 57.99	(1957) 12.12	53.19
30-34	47.82	(1961) 57.19	(1957) 9.37	54.21
35-39	47.62	(1961) 57.78	(1957) 10.16	54.22
40-44	47.50	(1961) 56.55	(1957) 9.05	53.13
45-49	43.63	(1961) 54.79	(1957) 11.16	48.98
50-54	37.90	(1961) 46.10	(1966) 8.20	43.06
55-59	32.59	(1962) 42.59	(1966) 10.00	37.49
60-64	28.15	(1956) 39.26	(1966) 11.11	34.37
65-69	35.03	(1960) 39.62	(1963) 4.59	38.42
70+	33.72	(1959) 36.55	(1962) 2.83	34.91
All ages	44.78	(1961) 54.65	(1957) 9.87	49.88

Source: Based on Table A.2.

5. Distribution of Immigrants by Single Years of Age from
Five-Year Age Group Data

The age statistics for immigrants are published by the Department of Manpower and Immigration for calendar years in the standard five-year age groups, and consequently, Table 9 presents the proposed age-sex pattern of immigrants by age groups 0-4, 5-9, ... and 70+. The distribution of immigrants by single years of age up to 18 is obtained directly from tables of immigrants under 18 years of age by sex and year of birth that are made available to the Population Estimates and Projections (PEP) Section in order to prepare most accurate estimates of school population by single years of age. Subtracting the total for ages 15 to 18 from the total for the standard five-year age group 15 to 19, the figure for age 19 can also be easily obtained. Based on these recorded distributions of immigrants by single years of age and sex that are available in the worksheets relating to the current population estimates programme of the Section, the average pattern or percentage distribution within each five-year age group 0-4, 5-9, 10-14 and 15-19 was calculated for the period 1966 to 1968. These patterns within the five-year age groups by sex were then assumed to hold good for the future, and they were applied to the respective age group data of Table 9 so as to obtain single years of age distribution of future immigrants up to age 19 as shown in Table 11.

TABLE 11. Assumed Distribution of Immigrants by Single Years of Age
and Sex through 1984

(number per 100,000 persons)

Age	Immigrants	
	Males	Females
0	985	936
1	1,032	977
2	997	947
3	964	911
4	901	836
0-4	4,879	4,607
5	933	904
6	902	854
7	836	778
8	786	717
9	719	650
5-9	4,176	3,903
10	676	642
11	622	595
12	585	542
13	541	518
14	524	511
10-14	2,948	2,808
15	537	550
16	595	623
17	695	762
18	855	945
19	1,076	1,216
15-19	3,758	4,096
20	1,394	1,746
21	1,736	1,973
22	1,939	2,354
23	1,947	2,250
24	1,953	2,147
20-24	8,969	10,470

TABLE 11. Assumed Distribution of Immigrants by Single Years of Age
and Sex through 1984 — Continued

(number per 100,000 persons)

Age	Immigrants	
	Males	Females
25	1,906	1,826
26	1,912	1,729
27	1,920	1,624
28	1,781	1,499
29	1,628	1,371
25-29	9,147	8,049
30	1,378	1,183
31	1,247	1,058
32	1,118	993
33	1,034	867
34	951	799
30-34	5,728	4,838
35	884	747
36	805	680
37	731	610
38	669	566
39	610	520
35-39	3,699	3,123
40	540	464
41	480	419
42	424	371
43	389	349
44	356	328
40-44	2,189	1,931
45	319	309
46	286	286
47	252	264
48	237	259
49	222	253
45-49	1,316	1,371

TABLE 11. Assumed Distribution of Immigrants by Single Years of Age and Sex through 1984 — Continued

(number per 100,000 persons)

Age	Immigrants	
	Males	Females
50	212	253
51	197	248
52	182	243
53	173	242
54	163	240
50-54	927	1,226
55	154	238
56	146	236
57	136	233
58	130	228
59	128	222
55-59	694	1,157
60	116	224
61	109	218
62	104	211
63	102	190
64	99	169
60-64	530	1,012
65	105	176
66	103	164
67	96	151
68	88	138
69	79	126
65-69	471	755
70	73	120
71	65	110
72	55	99
73	49	89
74	40	75
70-74	282	493
75	33	62
76	27	52
77	22	45
78	17	38
79	13	31
75-79	112	228

TABLE 11. Assumed Distribution of Immigrants by Single Years of Age and Sex through 1984 — Concluded

(number per 100,000 persons)

Age	Immigrants	
	Males	Females
80	11	24
81	8	19
82	6	15
83	5	10
84	3	7
80-84	33	75
85	—	—
86	—	—
87	—	—
88	—	—
89	—	—
85-89	—	—
90+	—	—
Total	49,858	50,142

Note: (i) Age groups 0 to 19: Single years of age distribution was based on the average percentage distributions within the respective five-year age groups 0-4, 5-9, 10-14, and 15-19 that were obtained for immigrants in the worksheets of the current population estimates for Canada prepared by the Population Estimates and Projections Section, Census Division, DBS for the period June 1, 1966 to June 1, 1968.

(ii) Age groups 20 to 64: Based on Method III. For details see text.

(iii) Age groups 65 and over: Age groups 65 and over were split into single years of age on the basis of the average percentage distributions within the respective five-year age groups that were obtained for immigrants in the worksheets of the current population estimates for Canada for the period June 1, 1966 to June 1, 1968.

Source: Based on Table 9.

For ages 20 and over, the above direct approach is not possible because of the non-availability of data and, therefore, an indirect method is called for to split five-year age group data into single years of age. In the previous projections, the Sprague's Multipliers were used to obtain single years of age distribution of immigrants (Illing, et al. 1967, p.9; George and Gnanasekaran, 1968, p.5). In theory, the application of the Sprague's Multipliers is meant for a closed population. For this reason, three alternative methods of deriving single age distribution from five-year age group data have been examined below for application to the immigrant population by five-year age groups and sex given in Table 9.

- 5.1 Method I: This is a graphical method and applied in the following manner. The five-year age group data (i.e. average for 1959-68)(4) were first cumulated to give population below ages 5, 10, 15, 20, etc. Secondly, using these cumulative population totals, an ascending ogive was drawn and the cumulative population below each age 1, 2, 3, 4, 5, 6, 7, etc. was read off from the curve. The population at single age was then obtained by differencing these cumulative totals for two successive ages.
- 5.2 Method II: Given the five-year age group data for immigrants, this method assumes that the percentage composition by single years of age within the five-year age group is the same as a 'given' or 'standard' population for which single year age distribution is already available. Application of this technique is, for lack of another term, called the 'imputation method' in this study. For the present purpose, the population estimates of Canada for 1968 by single years of age and sex prepared by the PEP Section was adopted as the 'standard' population, and the data by five-year age groups in Table A.4 were distributed into single years of age by imputing the same age pattern that was obtained in the 1968 estimates within the appropriate quinquennial age groups by sex.
- 5.3 Method III: This method is based on linear interpolation and comprises two steps. First, one fifth of the five-year age group total was calculated and assumed to be the population of the middle age of the respective five-year age group. The population of the intervening ages (e.g. between ages 17 and 22) was then obtained by straight-line interpolation using the assumed population of two successive middle ages (i.e. 17 and 22). The totals of the interpolated values for single ages when grouped into the standard five-year age groups may not agree with the initial group totals given in Table A.4. Therefore, the second step was to pro-rate the interpolated values for single ages so as to add up to the initial group totals.

To evaluate and select one series of single age distribution, the results of the four methods (including the values based on the Sprague's Multipliers) are plotted on graphs for males and females separately. In Chart 4, the

(4) In this section, the average for 1959-68 was based on provisional data on immigrants by five-year age groups and sex, and therefore the five-year group totals in Table 11 will slightly differ from the corresponding values in Table 9 which are revised to include the final figures for 1968. This will not however affect the conclusions in this section.

series based on Methods I and II showed considerable fluctuations, and at some ages, the direction of fluctuation differed substantially between the two methods (e.g., ages 29, 31, 38, etc.). To focus attention here on ages over 20 only, the graphical method yielded values that showed marked variations even at ages over, say, 40 for which the results of the three remaining methods were remarkably close. Fluctuations between ages 20 and 40 were too wide to justify on theoretical grounds, and therefore, the graphical method was ruled out.

Under the imputation method (Method II) the immigration was seen to attain its peak at ages 20 and 25. The sudden drop in the value for age 24 couldn't be easily explained from the point of immigration theory. The explanation perhaps lies in the methodology that might have overestimated the beginning (i.e. 20, 25) of the groups 20-24 and 25-29, respectively and underestimated the end age (i.e. 24). The choice of a suitable series, therefore, falls on Method III. Estimates by this method deviated less from the values under Method I and Method II (see Chart 4) which reinforces the choice of linear interpolation for distributing five-year group data into single years of age starting from 20. Hence, the series based on Method III was adopted for projections by single years of age.

Application of Method III was, however, not possible for the last five-year age group 65-69 and the terminal age group 70 and over. The single year age distribution for these two groups was based on the average pattern during 1966-68 that was obtained for immigrants in the worksheets of population estimates for Canada.(5)

6. Age-Sex Structure of Emigrants

As pointed out earlier, emigration data are too limited to conduct the foregoing analyses and arrive at a satisfactory age-sex distribution. Usually, this variable constitutes the 'residual' group in most analyses and, therefore, carries various errors belonging to the data on other variables, namely, population, births, deaths and immigration statistics, and sometimes, to the methodology as well. Any direct, even though not exact, inference of the age-sex pattern of emigrants should rest on the annual immigration statistics compiled by the U.S.A.(6) No information on the age-sex composition of Canadian emigrants to countries other than U.S.A. is as yet readily available. In the circumstances it is assumed throughout this study that the age-sex composition of all emigrants from Canada would look the same as the age-sex pattern of the Canadian emigrants to U.S.A. for whom data are available.

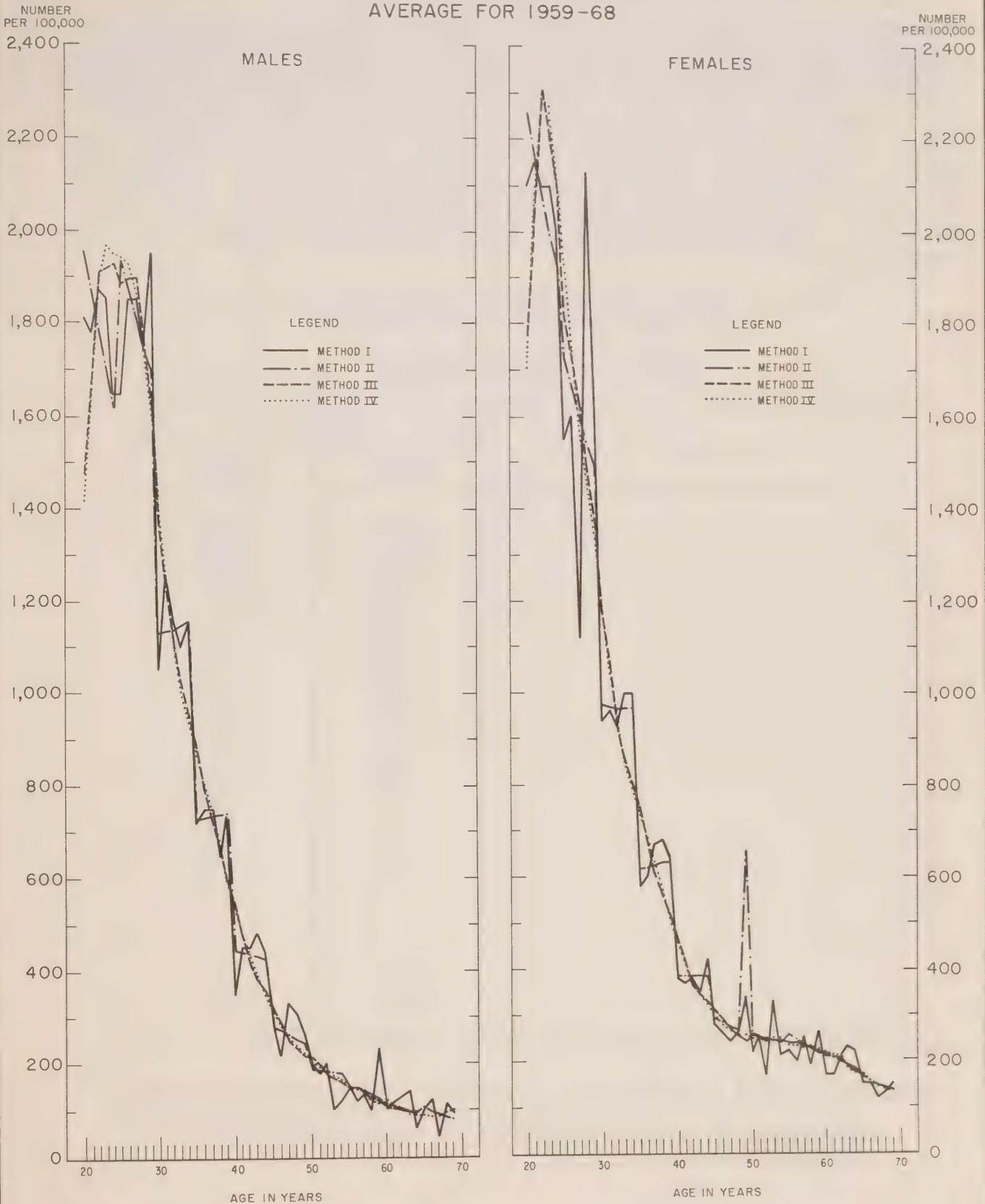
The emigration stream from Canada to U.S.A. consists normally of (a) persons born in Canada, and (b) persons born outside and migrated to Canada. The immigration statistics of U.S.A. are published for the year ending June 30 by country/region

(5) The procedure followed generally in the estimation programme is to base it on a graph or by Sprague's Multipliers.

(6) The emigration from Canada to U.S.A. constituted about two thirds of the estimated total emigration in the past years.

CHART 4

COMPARISON OF DISTRIBUTION OF IMMIGRANTS BY SEX AND SINGLE YEARS OF AGE
USING METHODS I, II, III AND THE SPRAGUE'S MULTIPLIERS
AVERAGE FOR 1959-68



Source: Unpublished worksheets of the Population Estimates and Projections Section, Census Division, Dominion Bureau of Statistics, Ottawa.

of birth, age and sex. In the earlier projections the above data relating only to the Canadian born were used to obtain the age-sex structure of total emigrants.

From 1966, by a special and continuous arrangement with the US Department of Justice, the aforementioned age-sex classification had been obtained for all emigrants from Canada, that is, persons reporting Canada as their last permanent residence. Besides the complete coverage of emigrants in these special tables, the information is made available by five-year age groups and sex which is however not the case of published tables for the Canadian-born emigrants. For these two reasons, the new data though available only for a short period formed the basis for arriving at the age-sex distribution of emigrants. Table 12 presents the average age-sex composition of emigrants from July 1, 1966 to December 31, 1968 which is assumed for future emigrants from Canada to all countries including the U.S.A.

TABLE 12. Assumed Age-Sex Composition of Emigrants by
Five-Year Age Groups through 1984

(number per 100,000 persons)

Age group	Emigrants	
	Males	Females
0- 4	6,365	5,985
5- 9	5,053	5,069
10-14	3,532	3,447
15-19	2,689	3,596
20-24	3,601	8,881
25-29	6,436	7,240
30-34	6,097	5,105
35-39	4,861	3,826
40-44	3,199	2,755
45-49	2,143	1,846
50-54	1,397	1,480
55-59	939	1,072
60-64	539	721
65-69	429	523
70-74	287	357
75-79	131	201
80-84	51	84
85-89	22	21
90-94	6	9
95+	2	3
Total	47,779	52,221

Note: Average for the period July 1, 1966 to December 31, 1968.

Source: Unpublished data provided periodically to the Population Estimates and Projections Section, Census Division, DBS by the United States Department of Justice, Immigration and Naturalization Service, Washington, D.C.

As in the case of immigrants, Method III was applied to distribute the five-year group data in Table 12 by single years of age. For ages below 20, the single age distribution was calculated on the basis of the average pattern estimated for emigrants in preparing current population estimates for 1966-68. Likewise, for the last five-year age group and the terminal age group, the single year age distribution was based on the average pattern as obtained within the respective five-year age groups for emigrants in the worksheets of population estimates for the period 1966-68. The results by sex and single ages are given in Table 13.

TABLE 13. Assumed Distribution of Emigrants by Single Years of Age and Sex through 1984

(number per 100,000 persons)

Age	Emigrants	
	Males	Females
0	1,258	1,118
1	1,243	1,129
2	1,302	1,208
3	1,300	1,253
4	1,262	1,277
0-4	6,365	5,985
5	1,052	1,122
6	1,034	1,088
7	1,016	1,032
8	990	955
9	961	872
5-9	5,053	5,069
10	863	765
11	783	710
12	692	666
13	617	647
14	577	659
10-14	3,532	3,447
15	476	599
16	453	635
17	513	670
18	592	732
19	655	960
15-19	2,689	3,596
20	608	1,505
21	635	1,730
22	664	1,953
23	779	1,878
24	915	1,815
20-24	3,601	8,881
25	1,112	1,592
26	1,237	1,522
27	1,364	1,455
28	1,363	1,374
29	1,360	1,297
25-29	6,436	7,240

TABLE 13. Assumed Distribution of Emigrants by Single Years of Age and Sex through 1984 — Continued

(number per 100,000 persons)

Age	Emigrants	
	Males	Females
30	1,253	1,152
31	1,253	1,078
32	1,250	1,011
33	1,197	958
34	1,144	906
30-34	6,097	5,105
35	1,088	864
36	1,034	808
37	980	760
38	914	716
39	845	678
35-39	4,861	3,826
40	755	629
41	691	591
42	627	552
43	585	510
44	541	473
40-44	3,199	2,755
45	503	435
46	461	394
47	421	352
48	392	340
49	366	325
45-49	2,143	1,846
50	331	328
51	302	312
52	274	298
53	254	280
54	236	262
50-54	1,397	1,480
55	228	248
56	206	230
57	183	210
58	168	198
59	154	186
55-59	939	1,072

TABLE 13. Assumed Distribution of Emigrants by Single Years of Age and Sex through 1984 — Continued

(number per 100,000 persons)

Age	Emigrants	
	Males	Females
60	130	167
61	118	155
62	102	142
63	97	133
64	92	124
60-64	539	721
65	96	133
66	90	115
67	85	98
68	83	92
69	75	85
65-69	429	523
70	68	76
71	63	74
72	59	71
73	51	68
74	46	68
70-74	287	357
75	32	54
76	28	45
77	25	39
78	25	34
79	21	29
75-79	131	201
80	13	24
81	11	21
82	11	16
83	9	13
84	7	10
80-84	51	84
85	9	9
86	6	6
87	4	3
88	2	2
89	1	1
85-89	22	21
90+	8	12
Total	47,779	52,221

TABLE 13. Assumed Distribution of Emigrants by Single Years of Age
and Sex through 1984 — Concluded

(number per 100,000 persons)

Age	Emigrants	
	Males	Females

- Note: (i) Age groups 0 to 19: Single years of age distribution was based on the average percentage distributions within the respective five-year age groups 0-4, 5-9, 10-14, and 15-19 that were obtained for emigrants in the worksheets of the current population estimates for Canada prepared by the Population Estimates and Projections Section, Census Division, DBS for the period June 1, 1966 to June 1, 1968.
- (ii) Age groups 20 to 64: Based on Method III. For details see text.
- (iii) Age groups 65 and over: Age groups 65 and over were split into single years of age on the basis of the average percentage distributions within the respective five-year age groups that were obtained for emigrants in the worksheets of the current population estimates for Canada for the period June 1, 1966 to June 1, 1968.

Source: Based on Table 12.

7. Projection Results

7.1 Immigration Projections

Four main assumptions of immigration to Canada are postulated earlier in Table 4. These are respectively a direct inflow of 200,000; 160,000; 120,000 and 80,000 persons each year from 1969 to 1984. Further it was assumed that, following the year of arrival, the future mortality and fertility among immigrants would be the same as those projected for the resident population. In regard to fertility four assumptions - low, medium, intermediate and high - were made (Romaniuk, 1969): Low fertility implied a slight decline in total fertility(7) from 2.41 children in 1969 to 2.27 in 1984 while the medium fertility involved a constant level of about 2.40-2.42 children during the projection period. Both the intermediate and the high fertility assumptions denoted a rising trend in total fertility. Under the intermediate assumption, the total fertility of 2.41 children in 1969 was projected to increase to 2.58 children in 1984 and, under the high assumption to 2.82 children in 1984.

Mortality decline in future is not expected to be great and therefore, a single assumption of slightly declining mortality was adopted in these projections. (Zayachkowski, 1969). Based on these assumptions regarding both the direct and indirect contributions of immigration, the projections were prepared using the component method. Table 14 presents the results of selected four projections for a period of fifteen years.

(7) The total fertility rate is the number of children a woman will bear if she lives to the end of her childbearing period. It is calculated by summing the age specific-fertility rates (i.e., number of births per woman at each age in a given year) of women 15 to 49 years.

TABLE 14. Cumulative Projections of Immigration to Canada, 1969-84

Period	Projection period in years	Cumulative gain due to a gross immigration in each year			
		200,000 persons (High fertility) Assumption 1	160,000 persons (Medium fertility) Assumption 2	120,000 persons (Medium fertility) Assumption 3	80,000 persons (Low fertility) Assumption 4
1969-70 ...	1	199,751	159,790	119,842	79,891
1969-71 ...	2	406,102	324,760	243,601	162,341
1969-72 ...	3	619,319	494,961	371,375	247,334
1969-73 ...	4	839,493	670,320	503,173	334,796
1969-74 ...	5	1,066,536	850,659	638,919	424,610
1969-79 ...	10	2,292,672	1,817,146	1,369,268	904,178
1969-84 ...	15	3,637,855	2,866,042	2,165,213	1,422,440
As per cent of the base population (i.e. 1969)(1)					
1969-70 ...	1	0.95	0.76	0.57	0.38
1969-71 ...	2	1.92	1.54	1.15	0.77
1969-72 ...	3	2.94	2.35	1.76	1.17
1969-73 ...	4	3.98	3.18	2.39	1.59
1969-74 ...	5	5.06	4.03	3.03	2.01
1969-79 ...	10	10.87	8.61	6.49	4.29
1969-84 ...	15	17.24	13.59	10.26	6.74

(1) The population in the base year 1969 was estimated to be 21,061,000.

Note: In the present programme, it was assumed that the immigrants would not bear any children during the year of their arrival and that they would be exposed on average to six months of mortality.

Sources: Tables B.1 and unpublished worksheets.

Assuming a gross inflow of 200,000 persons each year, the cumulative addition of immigration to future population in, say, five years from 1969 will be about 1,067,000 persons or in relative terms, 5.1 per cent of the base population. The increase over and above the total inflow in five years of 67,000 (1,067,000 - (200.5)) may be noted here as the indirect contribution in five years (i.e., births minus deaths among the immigrants). Over the entire projection period of fifteen years, the total contribution of immigration according to Assumption 1 (i.e., gross immigration of 200,000 persons per year) will approximate 3,638,000 persons.

According to Assumption 2, i.e., a gross immigration of 160,000 persons a year, the total contribution to future population increase is expected to be 851,000 during the five years (1969 to 1974) and 2,866,000 during the fifteen years (1969 to 1984). The contributions, under other assumptions (namely, 120,000 and 80,000 immigrants a year) are indicated in the last two columns of Table 14.

7.2 Emigration Projections

Only one assumption was made in this study with regard to emigration viz., 60,000 persons each year. The cumulative losses according to this assumption are given in Table 15 for different periods. These projections in Table 15 differ only in respect to the future level of fertility among emigrants which is assumed, as in the case of immigrants, to be the same as that projected for the base population.

TABLE 15. Cumulative Projections of Emigration from Canada, 1969-84

Period	Projection period in years	Cumulative loss due to a gross emigration in each year			
		60,000 persons (High fertility) Assumption 1	60,000 persons (Medium fertility) Assumption 2	60,000 persons (Medium fertility) Assumption 3	60,000 persons (Low fertility) Assumption 4
1969-70 ...	1	59,921	59,921	59,921	59,921
1969-71 ...	2	121,599	121,567	121,567	121,544
1969-72 ...	3	185,082	184,932	184,932	184,836
1969-73 ...	4	250,393	249,993	249,993	249,753
1969-74 ...	5	317,494	316,676	316,676	316,209
1969-79 ...	10	677,181	671,485	671,485	668,547
1969-84 ...	15	1,071,135	1,055,345	1,055,345	1,047,915
As per cent of the base population (i.e. 1969)(1)					
1969-70 ...	1	0.28	0.28	0.28	0.28
1969-71 ...	2	0.58	0.58	0.58	0.58
1969-72 ...	3	0.88	0.88	0.88	0.88
1969-73 ...	4	1.19	1.18	1.19	1.18
1969-74 ...	5	1.50	1.50	1.50	1.50
1969-79 ...	10	3.21	3.18	3.20	3.17
1969-84 ...	15	5.08	5.00	5.04	4.97

(1) The population in the base year 1969 was estimated to be 21,061,000.

Note: See Table 14.

Sources: Table B.2 and unpublished worksheets.

During a span of five years, the cumulative loss resulting from a gross emigration of 60,000 persons a year will be approximately 317,000 or about 1.2 per cent of the population in 1969. The loss over the entire projection period is expected to vary from 1,048,000 to 1,071,000 depending upon the future level of fertility.

7.3 Projections of Net Migration

In order to assess the net effect of future migration, Table 16 was derived by subtracting the emigration projections in Table 15 from the immigration projections in Table 14. The net contribution which is indeed postulated to be positive throughout the projection period under all four assumptions, will amount in five years (i.e., 1969 to 1974) to about 534,000 under the assumptions of medium fertility and a net migration of 100,000 persons per year (i.e., 160,000 immigrants minus 60,000 emigrants in a year). This will mean an increase in five years of 2.5 per cent of the population in the base year 1969 or less than one-half of a per cent of the population in each year.

The cumulative net gain under the assumption of a larger volume of net inflow, namely, 140,000 persons per year (i.e., 200,000 immigrants minus 60,000 emigrants), will be 749,000 people(8) or 3.6 per cent of the population in the base year. The net addition that is expected according to the assumption of 20,000 a year (i.e., 80,000 immigrants minus 60,000 emigrants) will be roughly 108,000 persons in five years. This gain in five years will amount to just one-half of a per cent of the population in 1969.

(8) A part of this increased addition is due to the high fertility level that is assumed in these projections.

TABLE 16. Net Additions to Population from Projected Immigration to and Emigration from Canada, 1969-84

Period	Proje- ction period in years	Cumulative net additions to population assuming			
		High fertility and net immigration of 140,000 persons a year	Medium fertility and net immigration of 100,000 persons a year	Medium fertility and net immigration of 60,000 persons a year	Low fertility and net immigration of 20,000 persons a year
		(Series A)	(Series B)	(Series C)	(Series D)
1969-70	1	139,830	99,869	59,921	19,970
1969-71	2	284,503	203,193	122,034	40,797
1969-72	3	434,237	310,029	186,443	62,498
1969-73	4	589,100	420,327	253,180	85,043
1969-74	5	749,042	533,983	322,243	108,401
1969-79	10	1,615,491	1,415,661	697,783	235,631
1969-84	15	2,566,720	1,810,697	1,109,868	373,525
As per cent of the base population (i.e. 1969)(1)					
1969-70	1	0.67	0.48	0.29	0.10
1969-71	2	1.34	0.96	0.57	0.19
1969-72	3	2.06	1.47	0.88	0.29
1969-73	4	2.79	2.00	1.20	0.41
1969-74	5	3.56	2.53	1.53	0.51
1969-79	10	7.66	5.43	3.29	1.21
1969-84	15	12.16	8.59	5.22	1.77

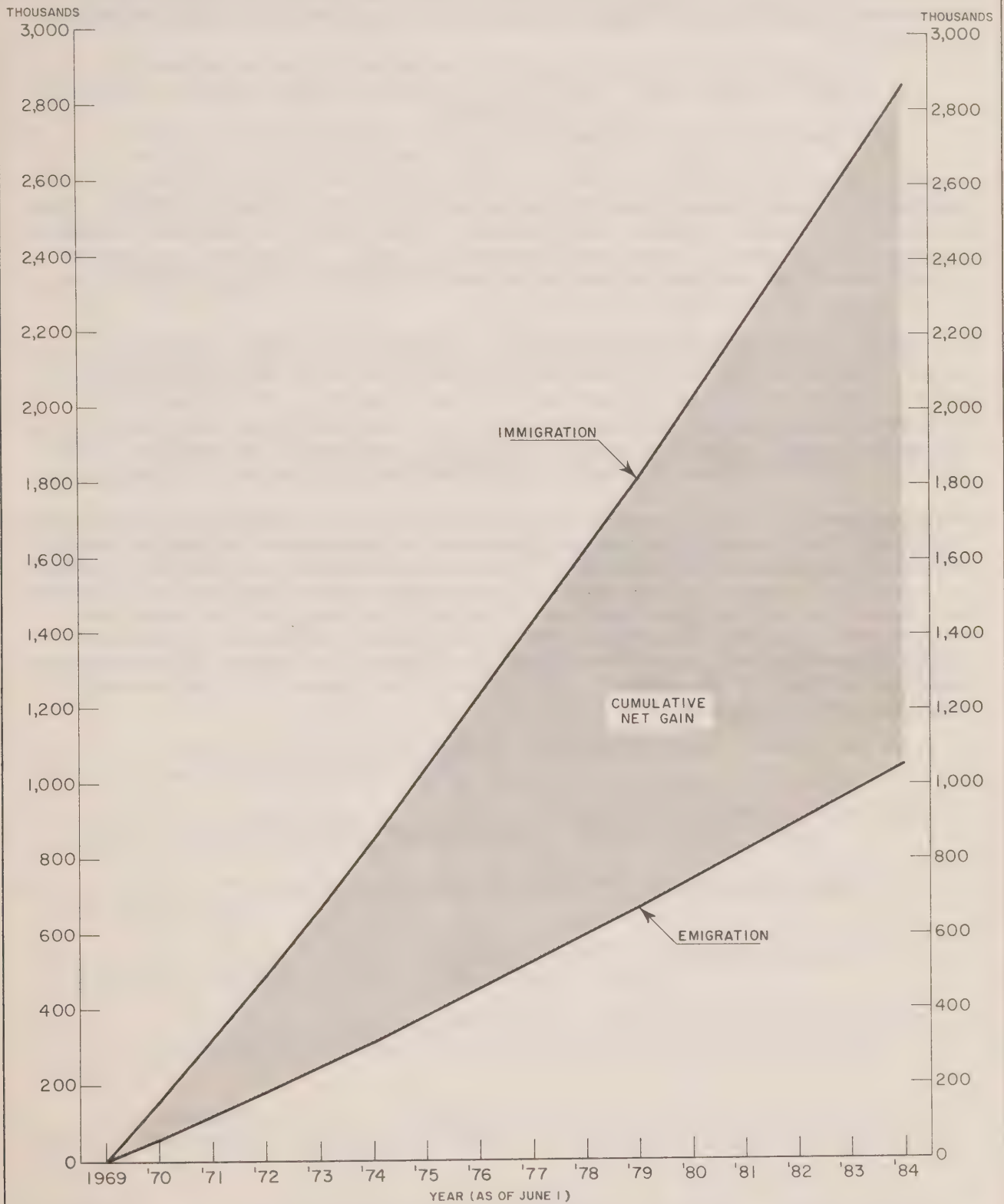
(1) The population in the base year 1969 was estimated to be 21,061,000.

Note: These net additions are included in the national population projection Series A, B, C, and D, respectively. See: "The Population Projections for Canada, 1969-84." Analytical and Technical Memorandum No. 4, Census Division, DBS, Ottawa: April 1970.

Sources: Based on Tables 14 and 15.

CHART 5

PROJECTED ADDITIONS TO POPULATION THROUGH MIGRATION, 1969-84
(NET GAIN OF 100,000 PERSONS A YEAR)



Source: Tables 14 and 15.

The projections indicate about the same trends over the long terms, namely ten and fifteen years. In brief, under all four assumptions, the net contribution of migration to future population change is seen to constitute less than three fourths of a per cent of the population in any given year between 1969 and 1984.

8. Conclusion

Migration studies addressed to the specific goal of making projections are few because of its negligible impact on demographic trends in most countries. This is not true of Canada and, in fact judging by past trends, migration is a very significant component of population change in a year. Therefore, projections of immigration and emigration have close bearing on the accuracy and quality of population projections for Canada.

This study was specifically undertaken to aid the preparation of population projections for Canada and in several respects, the scope was dovetailed to the present DBS projections programme. It was, however, a modest effort in this most hazardous field and in the course of its completion, many theoretical and methodological questions emerged to which answers were not readily available nor sought immediately in view of limitations of data and resources.

The questions are: What factors determine the volume of immigration and emigration in a given period? Do these factors operate ex post or ex ante? Further, are they exogeneous or endogeneous? What are the differentials in the fertility and mortality patterns of the migrants? Answers to these questions will require many basic studies and sometimes even joint work by the principal receiving (e.g. U.S.A.) and/or losing (e.g. U.K., Italy, etc.) countries, with focus on the preparation of immigration/emigration projections. Much of the improvements in the quality of population projections for Canada will lie in the progress of such studies.

REFERENCES

- Canada. Department of Manpower and Immigration. Immigration Statistics. (Annual) Immigration Division, M & I. Ottawa: Queen's Printer, 1969.
- _____. Dominion Bureau of Statistics. Estimated Population of Canada by Provinces. (Annual) DBS Cat. No. 91-201. Ottawa: Queen's Printer, 1969.
- _____. Dominion Bureau of Statistics. Vital Statistics 1967. (Annual) DBS Cat. No. 84-202, Table D1. Ottawa: Queen's Printer, 1968.
- _____. Dominion Bureau of Statistics. 1966 Census of Canada. Population: Single Years of Age. Bul. 1-11, Table 25. Cat. No. 92-611. Ottawa: Queen's Printer, 1968.
- _____. Dominion Bureau of Statistics. Population 1921-1966. Cat. No. 91-511. Ottawa: Queen's Printer, 1968.
- _____. Dominion Bureau of Statistics. "The Population Projections for Canada, 1969-84". Analytical and Technical Memorandum No. 4. Census Division, DBS, Ottawa, April 1970.
- George, M.V. and Gnanasekaran, K.S. "1966 Census Data and Recent Population Projections for Canada". Technical Memorandum (Population Estimates and Projections Series) No. 2. Census Division, DBS, Ottawa, 1968.
- Gnanasekaran, K.S., Romaniuk, A. and Stone, L.O. "The New Population Projections: Methods and Policy Issues Involved", in Some Recent Developments in the Dominion Bureau of Statistics. DBS Paper prepared for the Canadian Economics Association's Third Annual Meeting, Toronto, 1969, 41-47.
- Illing, Wolfgang M. (with technical contributions by Yoshiko Kasahara, Frank T. Denton and M.V. George). "Population, Household and Labour Force Growth to 1980". Staff Study No. 19, Economic Council of Canada. Ottawa: Queen's Printer, 1967, 1-48.
- Jaffe, A.J. Handbook of Statistical Methods for Demographers. Washington, D.C.: U.S. Government Printing Office, 1951. Ch. IV.
- Kalbach, Warren E. The Impact of Immigration on Canada's Population. 1961 Census Monograph, Cat. No. CS 99-546, 1970. Ottawa: Queen's Printer, 1970.
- Keyfitz, Nathan. "The Growth of Canadian Population". Population Studies, 4 (June 1950), 47-63.
- McDougall, D.M. "Immigration into Canada, 1851-1920". The Canadian Journal of Economics and Political Science, 27 (May 1961), 162-175.
- Romaniuk, A. "Fertility Projections for Canada". Background Paper prepared for DBS 1969 Population Projections, PEP Section, Census Division, DBS, Ottawa, November 1969.
- _____, and Gnanasekaran, K.S. "Approach to the DBS Population Projections for Canada". Memorandum, Population Estimates and Projections Section, Census Division, DBS, Ottawa, March 1969.
- Zayachkowski, W. "Mortality Projections for Canada up to 1984". Background Paper prepared for DBS 1969 Population Projections, Vital Statistics Section, Health and Welfare Division, DBS, Ottawa, November 1969.

APPENDIX A

Migration Statistics

TABLE A.1 Immigration to and Emigration from Canada, 1946-68

Year	Immigrants	Emigrants
1946	71,719	45,000
1947	64,127	48,500
1948	125,414	48,800
1949	95,217	48,500
1950	73,912	43,900
1951	194,391	47,900
1952	164,498	55,400
1953	168,868	58,200
1954	154,227	57,700
1955	109,946	57,700
1956	164,857	67,100
1957	282,164	68,900
1958	124,851	70,600
1959	106,928	61,500
1960	104,111	73,300
1961	71,689	73,600
1962	74,586	73,900
1963	93,151	76,800
1964	112,606	77,100
1965	146,758	81,200
1966	194,743	68,800
1967	222,876	62,800
1968	183,974	73,000

Source: Immigration statistics are from the Department of Manpower and Immigration (Immigration Division), Immigration Statistics, 1956 to 1968 and relate to calendar years. Figures for emigrants are estimates used in the current population estimates for Canada prepared at the Population Estimates and Projections Section, Census Division, DBS and relate to census years from June 1 to May 31.

TABLE A.2 Immigrants to Canada by Five-Year Age Groups and Sex, 1956-68

Age group	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Males													
0-4	7,396	13,524	5,651	4,821	4,471	3,167	3,408	4,364	5,760	7,873	10,639	10,997	8,490
5-9	7,135	12,620	4,123	4,312	4,005	2,756	2,860	3,619	4,716	6,593	8,917	9,438	7,551
10-14	4,348	8,193	3,825	3,398	3,149	2,221	2,181	2,735	3,510	4,511	5,839	6,166	4,945
15-19	7,270	10,882	5,192	4,433	4,181	2,610	2,899	3,592	4,463	5,889	7,068	7,380	6,766
20-24	18,918	29,898	11,307	9,139	9,966	5,572	5,821	7,585	8,996	12,377	17,474	21,976	18,714
25-29	17,321	29,328	10,363	8,473	8,956	5,228	5,944	8,338	9,977	13,375	18,328	23,059	18,277
30-34	11,107	20,097	6,538	5,593	5,669	3,369	3,892	5,329	6,430	8,585	11,524	13,906	10,823
35-39	6,344	12,892	4,302	3,771	3,726	2,323	2,574	3,541	4,213	5,656	7,756	8,483	6,465
40-44	3,977	6,907	2,449	2,084	1,994	1,367	1,459	2,070	2,688	3,516	4,824	4,982	3,726
45-49	2,417	4,602	2,095	1,880	1,592	979	904	988	1,378	1,768	2,593	2,918	2,264
50-54	1,403	2,331	1,369	1,316	1,173	747	775	818	1,064	1,407	1,722	1,824	1,316
55-59	773	1,298	938	860	779	504	498	640	868	1,057	1,311	1,400	1,174
60-64	400	666	547	541	509	418	450	526	616	755	917	1,032	1,186
65-69	369	521	496	451	434	420	426	538	587	708	756	874	984
70+	363	467	435	407	414	425	455	480	559	637	681	723	822
All ages	89,541	154,226	60,630	51,476	51,018	32,106	34,546	45,163	55,825	74,707	100,349	115,158	93,503
Females													
0-4	6,954	12,661	5,368	4,504	4,370	2,942	3,238	4,338	5,396	7,425	9,991	10,367	7,840
5-9	6,418	11,794	4,802	4,051	3,809	2,516	2,738	3,471	4,384	6,039	8,375	8,859	6,948
10-14	3,962	7,594	3,414	3,120	2,926	2,123	2,067	2,521	3,382	4,384	5,675	5,874	4,756
15-19	5,754	9,047	5,484	4,619	4,401	3,393	3,490	4,102	4,847	6,152	7,645	8,153	6,908
20-24	14,540	23,894	13,626	11,535	11,507	8,763	8,396	9,714	10,829	13,466	18,738	23,744	20,612
25-29	12,737	21,242	9,910	8,473	8,085	6,169	6,245	7,743	8,835	11,286	14,959	18,539	15,219
30-34	8,832	15,046	6,515	5,573	5,238	3,676	3,928	4,756	5,521	6,949	9,171	10,471	8,166
35-39	4,897	9,419	4,156	3,586	3,424	2,555	2,615	3,061	3,673	4,636	5,925	6,406	5,079
40-44	3,269	5,308	2,306	2,008	1,780	1,511	1,573	1,954	2,371	2,902	3,865	4,000	3,363
45-49	2,419	3,798	2,162	2,043	1,765	1,265	1,159	1,128	1,373	1,788	2,388	2,728	2,339
50-54	1,864	2,759	1,901	1,722	1,630	1,224	1,073	1,222	1,503	1,734	2,013	2,059	1,893
55-59	1,289	1,982	1,585	1,458	1,381	1,023	1,030	1,204	1,424	1,630	1,767	2,125	2,128
60-64	1,021	1,557	1,290	1,159	1,169	970	976	1,041	1,299	1,419	1,419	1,732	2,089
65-69	664	949	881	801	805	700	722	820	924	1,100	1,185	1,285	1,563
70+	696	888	821	800	803	753	790	913	1,020	1,141	1,278	1,376	1,568
All ages	75,316	127,938	64,221	55,452	53,093	39,583	40,040	47,988	56,781	72,051	94,394	107,718	90,471
Both sexes	164,857	282,164	124,851	106,928	104,111	71,689	74,586	93,151	112,606	146,758	194,743	222,876	183,974

Source: As in Table A.1.

TABLE A.3 Percentage Composition of Immigrants to Canada by Five-Year Age Groups and Sex, 1956-68

Age group	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Males													
0-4	8.25	8.76	9.32	9.36	8.76	9.86	9.86	9.86	10.32	10.53	10.60	9.55	9.08
5-9	7.96	8.18	8.45	8.37	7.85	8.58	8.28	8.01	8.45	8.82	8.88	8.19	8.07
10-14	4.85	5.31	6.31	6.60	6.17	6.92	6.31	6.06	6.29	6.04	5.82	5.35	5.29
15-19	8.11	7.05	8.56	8.61	8.19	8.13	8.39	7.95	7.99	7.88	7.04	6.41	7.23
20-24	21.11	19.37	18.65	17.5	19.53	17.35	16.85	16.79	16.11	16.56	17.40	19.08	20.01
25-29	19.33	19.00	17.09	16.45	17.55	16.28	17.20	18.46	17.87	17.90	18.25	20.02	19.54
30-34	12.40	13.02	10.78	10.86	11.11	10.49	11.26	11.80	11.52	11.49	11.48	12.07	11.57
35-39	7.08	8.35	7.09	7.32	7.30	7.23	7.45	7.84	7.55	7.57	7.72	7.36	6.91
40-44	4.44	4.48	4.04	4.05	3.91	4.26	4.22	4.58	4.81	4.70	4.80	4.32	3.98
45-49	2.70	2.98	3.45	3.65	3.12	3.05	2.62	2.19	2.47	2.37	2.58	2.53	2.42
50-54	1.57	1.51	2.26	2.56	2.30	2.33	2.24	1.81	1.91	1.88	1.72	1.58	1.41
55-59	0.86	0.84	1.55	1.67	1.53	1.57	1.44	1.42	1.55	1.41	1.31	1.22	1.26
60-64	0.45	0.43	0.90	1.05	1.00	1.30	1.30	1.16	1.10	1.01	0.91	0.90	1.27
65-69	0.41	0.34	0.82	0.88	0.85	1.31	1.23	1.19	1.05	0.95	0.75	0.76	1.05
70+	0.41	0.30	0.72	0.79	0.81	1.32	1.32	1.06	1.00	0.85	0.68	0.63	0.88
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Females													
0-4	9.23	9.89	8.36	8.12	8.23	7.43	8.09	9.04	9.50	10.30	10.58	9.62	8.66
5-9	8.52	9.21	7.48	7.30	7.17	6.36	6.84	7.23	7.72	8.38	8.87	8.22	7.68
10-14	5.26	5.93	5.32	5.63	5.51	5.36	5.16	5.25	5.96	6.08	6.01	5.45	5.26
15-19	7.64	7.07	8.54	8.33	8.29	8.57	8.71	8.54	8.54	8.53	8.10	7.57	7.63
20-24	19.30	18.66	21.22	20.80	21.67	22.14	20.96	20.23	19.07	18.68	19.84	22.03	22.78
25-29	16.90	16.59	15.43	15.28	15.22	15.58	15.59	16.13	15.56	15.65	15.84	17.20	16.82
30-34	11.72	11.75	10.14	10.05	9.86	9.29	9.81	9.91	9.72	9.64	9.71	9.72	9.02
35-39	6.50	7.36	6.47	6.47	6.45	6.45	6.53	6.38	6.40	6.43	6.27	5.94	5.61
40-44	4.34	4.15	3.59	3.62	3.35	3.82	3.93	4.07	4.18	4.03	4.09	3.71	3.72
45-49	3.21	2.97	3.37	3.68	3.32	3.20	2.89	2.35	2.42	2.48	2.53	2.53	2.58
50-54	2.47	2.15	2.96	3.10	3.07	3.09	2.68	2.55	2.65	2.41	2.13	1.91	2.09
55-59	1.71	1.55	2.47	2.63	2.60	2.58	2.57	2.51	2.51	2.26	1.87	1.97	2.35
60-64	1.35	1.22	2.01	2.09	2.20	2.45	2.44	2.17	2.29	1.97	1.50	1.61	2.31
65-69	0.88	0.74	1.37	1.44	1.52	1.77	1.80	1.71	1.63	1.53	1.25	1.19	1.73
70+	0.92	0.69	1.28	1.44	1.51	1.90	1.97	1.90	1.80	1.58	1.35	1.28	1.73
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: Figures will not add exactly to 100.00 due to rounding.

Source: Based on Table A.2.

TABLE A.4 Average Age-Sex Composition of Immigrants During 1959-68

(number per 100,000 persons)

Age group	Males	Females
0- 4	4,954	4,714
5- 9	4,167	3,912
10-14	2,961	2,840
15-19	3,815	4,217
20-24	8,914	10,419
25-29	9,069	8,028
30-34	5,699	4,839
35-39	3,670	3,121
40-44	2,183	1,924
45-49	1,305	1,365
50-54	929	1,225
55-59	688	1,143
60-64	515	987
65-69	459	738
70+	418	782
Total	49,746	50,254

Note: The ten-year average in this table was calculated by using the provisional statistics on immigration by five-year age groups and sex, for 1968 and therefore would differ from the figures given in Table 9 which were based on final figures for 1968.

Sources: Table A.2 and provisional unpublished immigration data by five-year age groups and sex for 1968.

APPENDIX B

Migration Projections

TABLE B.1 Cumulative Projections(1) of Immigration to Canada by Age and Sex through 1984
Medium Fertility and Gross Immigration of 160,000 Persons a Year

Age group	Males														
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
0	1,574	4,450	7,358	10,244	13,056	15,750	18,291	20,701	22,969	25,102	27,113	29,016	30,825	32,566	34,257
1	1,650	3,219	6,087	8,986	11,864	14,669	17,357	19,891	22,296	24,558	26,687	28,694	30,592	32,397	34,135
2	1,594	3,243	4,810	7,675	10,572	13,447	16,249	18,934	21,466	23,869	26,129	28,256	30,261	32,158	33,962
3	1,541	3,134	4,781	6,347	9,210	12,104	14,977	17,777	20,460	22,990	25,391	27,649	29,775	31,778	33,674
4	1,441	2,982	4,573	6,219	7,784	10,644	13,537	16,408	19,206	21,887	24,415	26,815	29,071	31,196	33,198
5	1,493	2,933	4,472	6,063	7,708	9,271	12,130	15,020	17,890	20,686	23,365	25,892	28,290	30,545	32,668
6	1,443	2,934	4,374	5,912	7,502	9,146	10,708	12,365	16,454	19,322	22,117	24,795	27,320	29,716	31,971
7	1,338	2,779	4,270	5,709	7,247	8,836	10,478	12,040	14,896	17,783	20,649	23,443	26,119	28,643	31,039
8	1,258	2,595	4,036	5,526	6,964	8,501	10,089	11,731	13,292	16,146	19,032	21,897	24,689	27,364	29,887
9	1,150	2,407	3,743	5,183	6,673	8,110	9,646	11,234	12,875	14,436	17,288	20,173	23,036	25,827	28,501
10	1,082	2,231	3,487	4,823	6,263	7,751	9,188	10,724	12,310	13,951	15,511	18,362	21,246	24,108	26,897
11	995	2,076	3,225	4,480	5,816	7,255	8,743	10,179	11,713	13,299	14,939	16,498	19,348	22,231	25,091
12	936	1,930	3,011	4,159	5,414	6,749	8,187	9,674	11,110	12,644	14,229	15,868	17,426	20,275	23,155
13	866	1,801	2,795	3,875	5,022	6,277	7,611	9,094	10,535	11,970	13,503	15,088	16,726	18,284	21,131
14	838	1,703	2,638	3,631	4,710	5,857	7,111	8,444	9,881	11,366	12,800	14,333	15,916	17,554	19,110
15	859	1,696	2,560	3,494	4,487	5,565	6,711	7,964	9,296	10,732	12,216	13,649	15,181	16,763	18,399
16	952	1,809	2,646	3,509	4,443	5,434	6,512	7,657	8,909	10,239	11,674	13,157	14,589	16,119	17,700
17	1,111	2,062	2,919	3,754	4,617	5,549	6,540	7,616	8,760	10,011	11,340	12,773	14,255	15,685	17,214
18	1,367	2,477	3,427	4,283	5,117	5,979	6,910	7,900	8,975	10,118	11,367	12,695	14,126	15,607	17,035
19	1,721	3,086	4,195	5,143	5,998	6,832	7,692	8,622	9,611	10,685	11,826	13,074	14,400	15,830	17,308
20	2,228	3,947	5,310	6,418	7,365	8,218	9,051	9,910	10,839	11,826	12,899	14,038	15,284	16,609	18,037
21	2,776	5,001	6,716	8,078	9,183	10,129	10,982	11,813	12,671	13,598	14,584	15,655	16,793	18,037	19,360
22	3,100	5,871	8,092	9,806	11,165	12,269	13,213	14,064	14,894	15,751	16,677	17,661	18,730	19,867	21,109
23	3,113	6,207	8,974	11,192	12,903	14,260	15,362	16,305	17,155	17,983	18,839	19,764	20,746	21,814	22,949
24	3,123	6,230	9,320	12,083	14,298	16,006	17,361	18,461	19,403	20,251	21,079	21,933	22,857	23,838	24,904
25-29	14,625	29,746	45,109	60,481	75,551	89,783	102,607	113,683	122,779	130,065	135,990	141,042	145,594	149,972	154,391
30-34	9,159	19,384	30,787	43,449	57,153	71,675	86,691	101,948	117,214	132,180	146,316	159,052	170,056	179,091	186,329
35-39	5,913	12,357	19,370	26,987	35,292	44,371	54,509	65,813	78,368	91,954	106,352	121,239	136,366	151,502	166,339
40-44	3,497	7,385	11,710	16,511	21,813	27,647	34,007	40,929	48,449	56,649	65,611	75,620	86,782	99,178	112,590
45-49	2,101	4,402	6,936	9,728	12,814	16,236	20,044	24,278	28,976	34,169	39,879	46,106	52,885	60,245	68,274
50-54	1,477	3,032	4,676	6,419	8,290	10,316	12,538	14,982	17,677	20,656	23,959	27,634	31,722	36,258	41,272
55-59	1,100	2,243	3,437	4,689	6,003	7,393	8,861	10,413	12,056	13,821	15,732	17,830	20,138	22,683	25,497
60-64	838	1,702	2,595	3,518	4,483	5,485	6,524	7,612	8,752	9,950	11,220	12,557	13,972	15,471	17,083
65-69	739	1,488	2,232	2,970	3,696	4,422	5,173	5,945	6,748	7,586	8,456	9,360	10,305	11,298	12,339
70-74															
75-79															
80-84	660	1,397	2,213	3,109	4,082	5,125	6,220	7,363	8,547	9,773	11,038	12,349	13,703	15,104	16,545
85-89															
90+															
All ages	79,658	161,939	246,884	334,453	424,558	517,061	611,810	708,649	807,432	908,006	1,010,222	1,113,967	1,219,124	1,325,613	1,433,351

TABLE B.1 Cumulative Projections(1) of Immigration to Canada by Age and Sex through 1984
Medium Fertility and Gross Immigration of 160,000 Persons a Year - Concluded

Age group	Females														1984
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	
0	1,496	4,232	7,000	9,746	12,422	14,987	17,404	19,696	21,852	23,881	25,793	27,599	29,315	30,967	32,571
1	1,561	3,053	5,783	8,543	11,283	13,954	16,513	18,925	21,213	23,365	25,390	27,298	29,100	30,814	32,462
2	1,514	3,074	4,565	7,292	10,050	12,768	15,456	18,013	20,423	22,709	24,860	26,883	28,789	30,591	32,303
3	1,458	2,971	4,530	6,019	8,744	11,501	14,288	16,930	19,459	21,867	24,152	26,300	28,322	30,228	32,028
4	1,338	2,794	4,307	5,865	7,353	10,077	12,832	15,566	18,231	20,785	23,192	25,475	27,623	29,643	31,548
5	1,447	2,784	4,247	5,751	7,308	8,796	11,519	14,272	17,005	19,669	22,222	24,627	26,909	29,056	31,076
6	1,366	2,812	4,148	5,603	7,115	8,671	10,158	12,879	15,631	18,363	21,062	23,758	26,432	28,264	30,409
7	1,245	2,610	4,035	5,391	6,846	8,356	9,912	11,399	14,119	16,870	19,601	22,263	24,813	27,217	29,498
8	1,147	2,391	3,756	5,201	6,536	7,990	9,500	11,056	12,561	15,261	18,011	20,741	23,402	25,952	28,355
9	1,040	2,186	3,430	4,795	6,239	7,574	9,028	10,537	12,042	13,578	16,297	19,046	21,775	24,435	26,985
10	1,027	2,066	3,213	4,456	5,820	7,264	8,599	10,052	11,562	13,116	14,602	17,319	20,068	22,796	25,456
11	952	1,978	3,018	4,164	5,407	6,770	8,214	9,549	11,002	12,510	14,065	15,550	18,267	21,015	23,743
12	867	1,818	2,845	3,884	5,029	6,272	7,636	9,079	10,413	11,866	13,374	14,928	16,413	19,129	21,877
13	829	1,696	2,647	3,673	4,712	5,857	7,100	8,462	9,905	11,239	12,691	14,200	15,753	17,237	19,953
14	818	1,646	2,512	3,464	4,490	5,528	6,673	7,915	9,278	10,720	12,053	13,505	15,013	16,566	18,050
15	880	1,697	2,526	3,392	4,342	5,368	6,406	7,550	8,792	10,154	11,596	12,929	14,381	15,888	17,440
16	997	1,876	2,693	3,521	4,387	5,338	6,363	7,400	8,544	9,786	11,147	12,589	13,921	15,372	16,879
17	1,219	2,215	3,094	3,911	4,739	5,604	6,554	7,578	8,616	9,759	11,000	12,361	13,802	15,134	16,584
18	1,512	2,730	3,726	4,604	5,421	6,248	7,113	8,063	9,087	10,123	11,267	12,507	13,867	15,308	16,639
19	1,946	3,456	4,674	5,669	6,548	7,364	8,191	9,055	10,004	11,028	12,064	13,207	14,447	15,807	17,246
20	2,793	4,738	6,248	7,465	8,460	9,338	10,154	10,980	11,844	12,793	13,816	14,852	15,994	17,234	18,593
21	3,156	5,948	7,892	9,401	10,618	11,612	12,490	13,305	14,131	14,995	15,943	16,966	18,001	19,143	20,382
22	3,765	6,920	9,710	11,653	13,161	14,377	15,371	16,248	17,063	17,889	18,752	19,700	20,723	21,757	22,899
23	3,599	7,362	10,515	13,304	15,245	16,753	17,969	18,962	19,839	20,653	21,479	22,342	23,289	24,311	25,345
24	3,434	7,031	10,792	13,943	16,730	18,671	20,178	21,393	22,386	23,262	24,076	24,901	25,764	26,710	27,732
25-29	12,873	26,979	42,276	58,732	75,566	92,265	107,471	120,593	131,170	139,595	146,115	151,510	156,225	160,588	164,907
30-34	7,736	16,383	26,034	36,781	48,591	61,419	75,474	90,717	107,114	123,890	140,531	155,683	168,757	179,299	187,697
35-39	4,992	10,425	16,334	22,747	29,755	37,456	46,058	55,660	66,353	78,107	90,870	104,857	120,024	136,341	153,036
40-44	3,084	6,472	10,199	14,303	18,813	23,769	29,162	35,022	41,388	48,343	55,985	64,523	74,053	84,667	96,331
45-49	2,189	4,493	6,935	9,539	12,349	15,398	18,744	22,426	26,479	30,936	35,832	41,159	46,952	53,240	60,115
50-54	1,957	3,926	5,913	7,926	9,991	12,139	14,397	16,790	19,345	22,101	25,091	28,372	31,985	35,961	40,332
55-59	1,844	3,703	5,573	7,445	9,327	11,224	13,135	15,063	17,012	19,015	21,099	23,290	25,611	28,091	30,764
60-64	1,609	3,283	5,001	6,735	8,484	10,240	12,011	13,793	15,578	17,371	19,180	20,999	22,838	24,698	26,610
65-69	1,197	2,438	3,739	5,113	6,549	8,039	9,592	11,184	12,792	14,413	16,043	17,685	19,336	20,991	22,652
70-74															
75-79															
80-84															
85-89															
90+															
All ages	80,131	162,816	248,081	335,869	426,106	518,677	613,413	710,162	808,787	909,142	1,011,101	1,114,522	1,219,315	1,325,396	1,432,699

(1) Figures include (i) the assumed gross immigration of 160,000 persons each year after allowance for mortality, (ii) all survivors among immigrants since 1969, and (iii) the survivors of births that are assumed to occur, according to medium fertility assumption, to immigrant women after a year of their arrival in Canada.

TABLE B.2 Cumulative Projections(1) of Emigration from Canada by Age and Sex through 1984
Medium Fertility and Gross Emigration of 60,000 Persons a Year

Age group	Males														
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
0	754	1,729	2,704	3,664	4,598	5,494	6,345	7,160	7,938	8,683	9,400	10,098	10,783	11,462	12,144
1	746	1,497	2,469	3,441	4,399	5,331	6,225	7,073	7,887	8,662	9,406	10,122	10,818	11,501	12,179
2	781	1,525	2,276	3,247	4,219	5,176	6,106	6,999	7,847	8,660	9,435	10,177	10,893	11,588	12,271
3	780	1,560	2,304	3,054	4,024	4,995	5,951	6,881	7,773	8,620	9,433	10,207	10,949	11,664	12,359
4	757	1,536	2,315	3,059	3,808	4,778	5,748	6,703	7,633	8,525	9,371	10,183	10,957	11,698	12,413
5	631	1,387	2,166	2,944	3,688	4,437	5,406	6,375	7,330	8,258	9,150	9,996	10,807	11,580	12,321
6	620	1,250	2,006	2,784	3,563	4,305	5,054	6,022	6,991	7,945	8,874	9,764	10,610	11,421	12,194
7	610	1,229	1,859	2,615	3,392	4,170	4,913	5,661	6,429	7,597	8,551	9,479	10,369	11,214	12,025
8	594	1,203	1,823	2,452	3,207	3,985	4,762	5,504	6,252	7,219	8,187	9,141	10,068	10,958	11,803
9	577	1,170	1,780	2,399	3,028	3,783	4,560	5,337	6,078	6,826	7,793	8,760	9,713	10,640	11,530
10	518	1,094	1,688	2,297	2,915	3,544	4,299	5,075	5,852	6,594	7,341	8,307	9,274	10,227	11,153
11	470	988	1,564	2,157	2,765	3,384	4,013	4,767	5,543	6,319	7,060	7,807	8,773	9,740	10,692
12	415	885	1,402	1,978	2,571	3,179	3,797	4,426	5,179	5,955	6,731	7,472	8,219	9,184	10,150
13	370	785	1,254	1,771	2,347	2,939	3,547	4,165	4,793	5,547	6,322	7,098	7,838	8,584	9,550
14	346	716	1,130	1,599	2,116	2,691	3,283	3,891	4,508	5,136	5,889	6,664	7,440	8,179	8,925
15	285	630	1,000	1,414	1,883	2,399	2,974	3,566	4,173	4,790	5,417	6,170	6,944	7,719	8,458
16	272	556	902	1,271	1,685	2,153	2,669	3,243	3,834	4,441	5,057	5,684	6,436	7,210	7,984
17	308	579	864	1,209	1,577	1,991	2,459	2,974	3,548	4,138	4,744	5,360	5,986	6,737	7,510
18	355	662	934	1,218	1,562	1,930	2,343	2,811	3,325	3,899	4,488	5,094	5,709	6,335	7,085
19	393	747	1,054	1,325	1,609	1,953	2,321	2,733	3,200	3,714	4,287	4,876	5,480	6,095	6,719
20	364	756	1,110	1,416	1,687	1,970	2,314	2,681	3,093	3,559	4,073	4,645	5,233	5,837	6,450
21	381	744	1,135	1,489	1,795	2,065	2,348	2,691	3,058	3,469	3,934	4,447	5,018	5,606	6,209
22	398	778	1,140	1,531	1,884	2,190	2,460	2,742	3,085	3,451	3,861	4,326	4,838	5,408	5,995
23	468	865	1,244	1,606	1,997	2,349	2,654	2,923	3,205	3,547	3,913	4,323	4,787	5,298	5,867
24	549	1,015	1,412	1,791	2,152	2,542	2,894	3,199	3,468	3,749	4,091	4,456	4,865	5,328	5,839
25-29	3,858	7,447	10,679	13,489	15,936	18,079	20,063	21,933	23,712	25,381	26,971	28,513	30,069	31,729	33,582
30-34	3,653	7,436	11,309	15,246	19,168	23,000	26,562	29,774	32,564	34,996	37,123	39,094	40,952	42,719	44,377
35-39	2,912	5,999	9,250	12,655	16,185	19,809	23,555	27,396	31,300	35,188	38,986	42,518	45,701	48,467	50,876
40-44	1,914	4,006	6,290	8,776	11,460	14,336	17,381	20,590	23,951	27,435	31,012	34,710	38,500	42,354	46,192
45-49	1,281	2,662	4,150	5,754	7,487	9,361	11,410	13,642	16,078	18,704	21,519	24,500	27,641	30,930	34,344
50-54	833	1,738	2,716	3,773	4,917	6,153	7,485	8,921	10,467	12,140	13,951	15,927	18,082	20,433	22,969
55-59	559	1,161	1,803	2,491	3,226	4,012	4,864	5,787	6,783	7,864	9,032	10,288	11,643	13,104	14,683
60-64	318	668	1,049	1,471	1,935	2,443	2,992	3,577	4,205	4,873	5,590	6,368	7,210	8,120	9,105
65-69	252	502	752	1,004	1,265	1,542	1,844	2,177	2,543	2,946	3,390	3,865	4,374	4,919	5,502
70-74)))))))))))))))
75-79)))))))))))))))
80-84	291	602	933	1,286	1,654	2,039	2,437	2,850	3,278	3,726	4,193	4,687	5,214	5,777	6,379
85-89)))))))))))))))
90+)))))))))))))))
All ages	28,613	58,107	88,466	119,676	151,704	184,507	218,038	252,249	287,103	322,556	358,575	395,126	432,193	469,765	507,834

6,379

5,777

5,214

4,687

4,193

3,726

3,278

2,850

2,437

2,039

1,654

1,286

933

602

291

507,834

TABLE B.2 Cumulative Projections(i) of Emigration from Canada by Age and Sex through 1984
Medium Fertility and Gross Emigration of 60,000 Persons a Year - Concluded

Age group	Females														
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
0	670	1,598	2,525	3,439	4,328	5,181	5,990	6,766	7,505	8,213	8,896	9,558	10,208	10,853	11,499
1	677	1,345	2,270	3,196	4,108	4,995	5,846	6,653	7,427	8,165	8,872	9,553	10,214	10,863	11,507
2	725	1,401	2,069	2,993	3,918	4,829	5,715	6,566	7,372	8,146	8,883	9,589	10,270	10,930	11,579
3	752	1,476	2,152	2,819	3,742	4,667	5,577	6,463	7,313	8,119	8,892	9,629	10,335	11,015	11,675
4	766	1,517	2,241	2,916	3,583	4,506	5,430	6,340	7,225	8,074	8,880	9,653	10,389	11,094	11,774
5	673	1,438	2,189	2,913	3,587	4,254	5,177	6,100	7,010	7,894	8,743	9,549	10,321	11,057	11,762
6	653	1,325	2,090	2,841	3,564	4,239	4,952	5,627	6,250	6,825	7,350	7,825	8,250	8,625	9,000
7	619	1,271	1,944	2,709	3,459	4,182	4,856	5,522	6,144	6,719	7,244	7,719	8,194	8,669	9,144
8	573	1,192	1,844	2,516	3,281	4,031	4,753	5,427	6,093	6,715	7,280	7,845	8,410	8,975	9,540
9	523	1,096	1,714	2,366	3,038	3,802	4,552	5,275	5,949	6,614	7,288	7,962	8,636	9,310	9,984
10	459	982	1,554	2,173	2,825	3,496	4,260	5,010	5,732	6,406	7,071	7,793	8,494	9,222	10,706
11	426	885	1,407	1,980	2,598	3,250	3,921	4,685	5,435	6,157	6,830	7,496	8,170	8,814	9,246
12	400	826	1,284	1,807	2,379	2,997	3,649	4,320	5,084	5,833	6,555	7,228	7,894	8,514	9,200
13	388	788	1,213	1,672	2,194	2,767	3,384	4,036	4,707	5,471	6,220	6,941	7,615	8,280	8,972
14	395	783	1,182	1,608	2,066	2,589	3,161	3,778	4,430	5,100	5,864	6,613	7,334	8,007	8,672
15	360	755	1,142	1,542	1,967	2,426	2,948	3,519	4,137	4,788	5,459	6,222	6,970	7,692	8,364
16	381	741	1,135	1,523	1,922	2,348	2,806	3,327	3,899	4,516	5,167	5,837	6,500	7,148	7,800
17	402	783	1,142	1,537	1,924	2,323	2,748	3,206	3,728	4,299	4,916	5,567	6,237	6,999	7,748
18	439	841	1,221	1,581	1,975	2,362	2,761	3,186	3,644	4,165	4,736	5,353	6,003	6,673	7,435
19	576	1,015	1,416	1,796	2,156	2,550	2,937	3,336	3,760	4,218	4,739	5,310	5,926	6,576	7,246
20	903	1,478	1,917	2,318	2,698	3,058	3,451	3,838	4,237	4,661	5,119	5,640	6,210	6,826	7,476
21	1,038	1,940	2,515	2,954	3,355	3,735	4,094	4,488	4,874	5,273	5,697	6,154	6,675	7,245	7,861
22	1,172	2,209	3,111	3,686	4,124	4,525	4,905	5,263	5,657	6,043	6,442	6,866	7,323	7,843	8,413
23	1,127	2,298	3,334	4,236	4,810	5,248	5,649	6,029	6,387	6,781	7,167	7,565	7,989	8,446	8,966
24	1,089	2,215	3,385	4,421	5,322	5,896	6,334	6,735	7,114	7,472	7,866	8,252	8,650	9,073	9,530
25-29	4,344	8,994	13,941	19,187	24,554	29,867	34,665	38,775	42,117	44,805	46,952	48,918	50,832	52,743	54,700
30-34	3,063	6,355	9,896	13,699	17,766	22,092	26,727	31,658	36,884	42,233	47,526	52,307	56,402	59,735	62,413
35-39	2,296	4,724	7,292	10,011	12,887	15,933	19,210	22,732	26,517	30,563	34,869	39,480	44,389	49,589	54,911
40-44	1,653	3,424	5,314	7,328	9,467	11,744	14,153	16,705	19,402	22,255	25,278	28,531	32,026	35,784	39,799
45-49	1,108	2,300	3,589	4,993	6,512	8,144	9,893	11,763	13,751	15,864	18,114	20,495	23,016	25,680	28,500
50-54	888	1,804	2,756	3,735	4,760	5,845	7,013	8,279	9,656	11,147	12,747	14,463	16,296	18,248	20,320
55-59	639	1,322	2,047	2,821	3,637	4,495	5,387	6,309	7,258	8,253	9,305	10,439	11,667	13,003	14,500
60-64	428	892	1,385	1,914	2,483	3,094	3,743	4,435	5,170	5,950	6,769	7,619	8,499	9,404	10,352
65-69	309	641	988	1,355	1,739	2,138	2,565	3,025	3,516	4,041	4,609	5,212	5,853	6,537	7,258
70-74)))))))))))))))
75-79 .....	)	815	1,259	1,734	2,247	2,799	3,387	4,008	4,668	5,365	6,106	6,893	7,733	8,622	9,573
80-84)))))))))))))))
85-89)))))))))))))))
90+)))))))))))))))
All ages	31,307	63,469	96,463	130,319	164,975	200,407	236,552	273,384	310,852	348,924	387,581	426,778	466,508	506,748	547,509

(1) Figures include (i) the assumed gross emigration of 60,000 persons each year after allowance for mortality during the year of departure, (ii) all survivors among emigrants since 1969; and (iii) the survivors of births that are assumed to occur, according to medium fertility assumption, to emigrant women before a year of their departure from Canada.

TABLE B.3 Cumulative Projections(1) of Net Migration for Canada by Age and Sex through 1984
Medium Fertility and Net Immigration of 100,000 Persons a Year (i.e., 160,000 immigrants minus 60,000 emigrants a year)

Age group	Males														
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
0	820	2,721	4,654	6,580	8,458	10,256	11,946	13,541	15,031	16,419	17,713	18,918	20,042	21,104	22,113
1	904	1,722	3,618	5,545	7,465	9,338	11,132	12,818	14,409	15,896	17,281	18,572	19,774	20,896	21,956
2	813	1,718	2,534	4,428	6,353	8,271	10,143	11,935	13,619	15,209	16,694	18,079	19,368	20,570	21,691
3	761	1,574	2,477	3,293	5,186	7,109	9,026	10,896	12,687	14,370	15,958	17,442	18,826	20,114	21,315
4	684	1,446	2,258	3,160	3,976	5,866	7,789	9,705	11,573	13,362	15,044	16,632	18,114	19,498	20,785
5	862	1,546	2,306	3,119	4,020	4,834	6,724	8,645	10,560	12,428	14,215	15,896	17,483	18,965	20,347
6	823	1,684	2,368	3,128	3,939	4,841	5,654	7,543	9,463	11,377	13,243	15,031	16,710	18,295	19,777
7	728	1,550	2,411	3,094	3,855	4,666	5,565	6,379	8,267	10,186	12,098	13,964	15,750	17,429	19,014
8	664	1,392	2,213	3,074	3,757	4,516	5,327	6,227	7,040	8,927	10,845	12,756	14,621	16,406	18,084
9	573	1,237	1,963	2,784	3,645	4,327	5,086	5,897	6,797	7,610	8,495	11,413	13,323	15,187	16,971
10	564	1,137	1,799	2,526	3,348	4,207	4,889	5,649	6,458	7,357	8,170	10,055	11,972	13,881	15,744
11	525	1,088	1,661	2,323	3,051	3,871	4,730	5,412	6,170	6,980	7,879	8,691	10,575	12,491	14,399
12	521	1,045	1,609	2,181	2,843	3,570	4,390	5,248	5,931	6,689	7,498	8,396	9,207	11,091	13,006
13	496	1,016	1,541	2,104	2,675	3,338	4,064	4,929	5,742	6,423	7,181	7,990	8,888	9,700	11,581
14	492	987	1,508	2,032	2,594	3,166	3,828	4,553	5,373	6,230	6,911	7,669	8,476	9,375	10,185
15	574	1,066	1,560	2,080	2,604	3,166	3,737	4,398	5,123	5,942	6,799	7,479	8,237	9,044	9,941
16	680	1,253	1,744	2,238	2,758	3,281	3,843	4,414	5,075	5,798	6,617	7,473	8,153	8,909	9,716
17	803	1,483	2,055	2,545	3,040	3,558	4,081	4,642	5,212	5,873	6,596	7,401	8,269	9,704	9,704
18	1,012	1,815	2,493	3,065	3,555	4,049	4,567	5,089	5,650	6,219	6,879	7,601	8,417	9,272	9,950
19	1,328	2,339	3,141	3,818	4,389	4,879	5,371	5,889	6,411	6,971	7,539	8,198	8,920	9,735	10,589
20	1,864	3,191	4,200	5,002	5,678	6,248	6,737	7,229	7,746	8,267	8,826	9,393	10,051	10,772	11,587
21	2,395	4,257	5,581	6,589	7,388	8,064	8,634	9,122	9,613	10,129	10,650	11,208	11,775	12,431	13,151
22	2,702	5,093	6,952	8,275	9,281	10,079	10,753	11,322	11,809	12,300	12,816	13,335	13,892	14,459	15,114
23	2,645	5,342	7,730	9,586	10,906	11,911	12,708	13,382	13,950	14,436	14,926	15,441	15,959	16,516	17,082
24	2,574	5,215	7,908	10,292	12,146	13,464	14,467	15,262	15,935	16,502	16,988	17,477	17,992	18,510	19,065
25-29	10,767	22,299	34,430	46,992	59,615	71,704	82,544	91,750	99,067	104,684	109,019	112,529	115,525	118,243	120,809
30-34	5,506	11,948	19,478	28,203	37,985	48,675	60,129	72,174	84,650	97,184	109,193	119,958	129,104	136,372	141,952
35-39	3,001	6,358	10,120	14,332	19,107	24,562	30,954	38,417	47,068	56,766	67,366	78,721	90,665	103,035	115,463
40-44	1,583	3,379	5,420	7,735	10,353	13,311	16,626	20,339	24,498	29,214	34,599	40,910	48,282	56,398	66,398
45-49	820	1,740	2,786	3,974	5,327	6,875	8,634	10,636	12,898	15,465	18,360	21,606	25,244	29,315	33,930
50-54	644	1,294	1,960	2,646	3,373	4,163	5,053	6,061	7,210	8,516	10,008	11,707	13,640	15,825	18,303
55-59	541	1,082	1,634	2,198	2,777	3,381	3,997	4,626	5,273	5,957	6,700	7,542	8,495	9,579	10,814
60-64	520	1,034	1,546	2,047	2,548	3,042	3,532	4,035	4,547	5,077	5,630	6,189	6,762	7,351	7,978
65-69	487	986	1,480	1,966	2,431	2,880	3,329	3,768	4,205	4,640	5,066	5,495	5,931	6,379	6,837
70-74)))))))))))))))
75-79)))))))))))))))
80-84)))))))))))))))
85-89)))))))))))))))
90+)))))))))))))))
All ages	51,045	103,832	158,418	214,777	272,854	332,554	393,772	456,445	520,329	585,450	651,647	718,841	786,931	855,848	925,517
						3,086	3,783	4,513	5,269	6,047	6,845	7,662	8,489	9,327	10,166

TABLE B.3 Cumulative Projections(1) of Net Migration for Canada by Age and Sex through 1984
Medium Fertility and Net Immigration of 100,000 Persons a Year (i.e., 160,000 immigrants minus 60,000 emigrants a year) - Concluded

Age group	Females														
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
0	826	2,634	4,475	6,307	8,094	9,806	11,414	12,930	14,347	15,668	16,897	18,041	19,107	20,114	21,072
1	884	1,708	3,513	5,347	7,175	8,959	10,667	12,272	13,786	15,200	16,518	17,745	18,886	19,951	20,955
2	789	1,673	2,496	4,299	6,132	7,959	9,741	11,447	13,051	14,563	15,977	17,294	18,519	19,661	20,724
3	706	1,495	2,378	3,200	5,002	6,834	8,659	10,440	12,146	13,748	15,260	16,671	17,987	19,213	20,353
4	572	1,277	2,054	2,949	3,770	5,571	7,402	9,226	11,006	12,711	14,312	15,822	17,234	18,549	19,774
5	774	1,346	2,051	2,838	3,721	4,542	6,342	8,172	9,995	11,775	13,479	15,078	16,588	17,999	19,314
6	713	1,487	2,058	2,762	3,551	4,432	5,253	7,052	8,881	10,704	12,482	14,186	15,784	17,295	18,704
7	626	1,339	2,111	2,682	3,387	4,174	5,056	5,877	7,675	9,504	11,326	13,104	14,805	16,404	17,914
8	574	1,199	1,912	2,685	3,255	3,959	4,747	5,629	6,449	8,246	10,074	11,896	13,673	15,375	16,973
9	517	1,090	1,716	2,429	3,201	3,772	4,476	5,262	6,143	6,964	8,761	10,589	12,409	14,186	15,888
10	568	1,084	1,659	2,283	2,995	3,768	4,339	5,042	5,830	6,710	7,531	9,326	11,154	12,974	14,750
11	526	1,093	1,611	2,184	2,809	3,520	4,293	4,864	5,367	6,353	7,235	8,054	9,850	11,677	13,497
12	467	992	1,561	2,077	2,650	3,275	3,987	4,759	5,329	6,033	6,819	7,700	8,519	10,315	12,141
13	441	908	1,434	2,001	2,518	3,090	3,716	4,426	5,198	5,768	6,471	7,259	8,138	8,957	10,753
14	423	863	1,331	1,856	2,424	2,939	3,512	4,137	4,848	5,620	6,189	6,892	7,679	8,559	9,378
15	520	942	1,384	1,850	2,375	2,942	3,458	4,031	4,655	5,366	6,137	6,707	7,411	8,196	9,076
16	616	1,135	1,558	1,998	2,465	2,990	3,557	4,073	4,645	5,270	5,980	6,752	7,321	8,023	8,809
17	817	1,432	1,952	2,374	2,815	3,281	3,806	4,372	4,888	5,460	6,084	6,794	7,565	8,135	8,836
18	1,073	1,889	2,505	3,023	3,446	3,886	4,352	4,877	5,443	5,958	6,531	7,154	7,864	8,635	9,204
19	1,370	2,441	3,258	3,873	4,392	4,814	5,254	5,719	6,244	6,810	7,325	7,897	8,521	9,231	10,000
20	1,890	3,260	4,331	5,147	5,762	6,280	6,703	7,142	7,607	8,132	8,697	9,212	9,784	10,408	11,117
21	2,118	4,008	5,377	6,447	7,263	7,877	8,396	8,817	9,257	9,722	10,246	10,812	11,326	11,898	12,521
22	2,593	4,711	6,599	7,967	9,037	9,852	10,466	10,985	11,406	11,846	12,310	12,834	13,400	13,914	14,486
23	2,472	5,064	7,181	9,068	10,435	11,505	12,320	12,933	13,452	13,872	14,312	14,777	15,300	15,865	16,379
24	2,345	4,816	7,407	9,522	11,408	12,775	13,844	14,658	15,272	15,790	16,210	16,649	17,114	17,637	18,202
25-29	8,529	17,985	28,335	39,545	51,012	62,398	72,806	81,818	89,053	94,790	99,163	102,592	105,393	107,845	110,207
30-34	4,673	10,028	16,138	23,082	30,825	39,327	48,747	59,059	70,230	81,657	93,005	103,376	112,355	119,564	125,284
35-39	2,696	5,701	9,042	12,736	16,868	21,523	26,848	32,928	39,836	47,544	56,001	65,377	75,635	86,752	98,125
40-44	1,431	3,048	4,885	6,975	9,346	12,025	15,009	18,317	21,986	26,088	30,707	35,992	42,027	48,883	56,532
45-49	1,081	2,193	3,346	4,546	5,837	7,254	8,851	10,663	12,728	15,072	17,718	20,664	23,936	27,560	31,615
50-54	1,069	2,122	3,157	4,191	5,231	6,294	7,384	8,511	9,689	10,954	12,344	13,909	15,689	17,713	20,012
55-59	1,205	2,381	3,526	4,624	5,690	6,729	7,748	8,751	9,754	10,762	11,794	12,851	13,944	15,088	16,314
60-64	1,181	2,391	3,616	4,821	6,001	7,146	8,268	9,358	10,408	11,421	12,411	13,380	14,339	15,294	16,258
65-69	888	1,797	2,751	3,758	4,810	5,901	7,027	8,159	9,276	10,372	11,434	12,473	13,483	14,454	15,394
70-74)))))))))))))))
75-79)))))))))))))))
80-84)))))))))))))))
85-89)))))))))))))))
90+)))))))))))))))
All ages	48,824	99,367	151,606	205,550	261,131	318,270	376,861	436,778	497,935	560,218	623,520	687,744	752,807	818,648	885,190
							8,413	10,072	11,855	13,765	15,780	17,885	20,068	22,324	24,629

(1) Figures are obtained by subtracting the values in each cell of Table B.2 from those of Table B.1.

